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Programed instruction for speech and language therapy, based upon stimulus control programing and presented by a completely automated teaching machine, was evaluated with 32 mentally retarded children, 20 children with language disorders (childhood aphasia), six adult aphasics, and 60 normal elementary school children. Posttesting with the Templin-Darley Articulation Test showed that the Automated Stimulus Control System (ASCS) machine treatment produced non-significant results with mental retardates receiving pure tone plus M&M candy reinforcement, and significantly improved discrimination and articulation with those receiving pure tone only reinforcement ($p<.05$). ASCS machine treatment produced significant changes with child aphasics ($p<.01$). Following treatment, these subjects also showed improvement on the Peabody Picture Vocabulary Test, the Illinois Test of Psycholinguistic Abilities, and on word list performance. Both ASCS machine treatment and ASCS clinician-presented treatment produced significantly improved articulation with normal elementary school children ($p<.001$). Adult aphasics showed no significant change, nor did retardates receiving traditional therapy. Results indicated that significant changes in functional articulation programs occurred in 20% of the time usually required by traditional therapies. (Author/SN)

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FINAL REPORT
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SPEECH AND LANGUAGE THERAPY UNDER AN AUTOMATED STIMULUS CONTROL SYSTEM

January 1968

U.S. DEPARTMENT OF
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Final Report
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SPEECH AND LANGUAGE THERAPY UNDER AN AUTOMATED STIMULUS CONTROL SYSTEM

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New Mexico State University

Las Cruces, New Mexico

January 1968

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TABLE OF CONTENTS

Section | Page

I. Summary 1

II. The Automated Speech Correction Program 10

A. The Problem 10

B. The Pilot Study 11

C. The ASCP Study 13

III. The Automated Stimulus Control System 28

A. The Model 28

B. Stimulus Control 32

C. The Programmed Instruction 34

D. The Teaching Machines 38

E. The Studies 40

1. Dixon State School 41

2. Atlanta Speech School, Incorporated 45

3. Veterans Administration Speech Pathology and Audiology Services 50

4. Las Cruces Schools 54

5. Latency Analysis 57

IV. Conclusions and Recommendations 58

V. References 65

VI. Appendixes

A. Sample from Computer-Generated Word Lists 76

B. Articulation and Phonetics Programmed Instruction 78

C. Automated Stimulus Control System Programmed Instruction Scripts 105

D. Sample from "Over" Program 237

E. ASCP and ASCS Teaching Machine Schematics 242

F. ERIC Report Resume Last Page

TABLE OF TABLES

Table **Page**

1. Analysis of Change in Articulation Following Total Automated Speech Correction Program Treatment (t), ASCP -- Las Cruces Schools -- 100 Subjects 3

2. Analysis of Change in Articulation Following Phase I and Phase II Treatment, ASCS -- Dixon State School 5

3. Analysis of Change in Articulation Following Phase I and Phase II Treatment, ASCS -- Atlanta Speech School, Inc. 6

4 Analysis of Change in Articulation Following Phase I and Phase II Treatment, ASCS -- Las Cruces Schools 8

5 A Model for "Probable Words" 16

6 General Design, Automated Speech Correction Program 20

7 Distribution of Subjects, Automated Speech Correction Program 21

8 Analysis of Change in Auditory Discrimination Following Phase I Treatment ASCP 22

9 Analysis of Change in Articulation Following Phase I and Phase II Treatment ASCP (t) 23

10 Time Spent on ASCP 26

11 Percent Error on Phase I ASCP 26

12 General Design, ASCS -- Dixon State School 42

13 Analysis of Change in Auditory Discrimination Following Phase I and Phase II Treatment ASCS -- Dixon State School 43

14 Analysis of Change in Articulation Following Phase I and Phase II Treatment, ASCS -- Dixon State School 43

15 Treatment Time in Minutes, ASCS -- Dixon State School 44

16	Percent Error on Phase I, ASCS -- Dixon State School	44
17	General Design, ASCS -- Atlanta Speech School, Inc.	45
18	Analysis of Change in Auditory Discrimination Following Phase I and Phase II Treatment ASCS -- Atlanta Speech School, Inc.	48
19	Analysis of Change in Articulation Following Phase I and Phase II Treatment, ASCS -- Atlanta Speech School, Inc.	49
20	Treatment Time in Minutes, ASCS -- Atlanta Speech School, Inc.	49
21	Percent Error on Phase I, ASCS -- Atlanta Speech School, Inc.	49
22	Treatment Time in Minutes, ASCS -- Atlanta Veterans Administration	51
23	Percent Error on Phase I, ASCS -- Atlanta Veterans Administration	51
24	General Design, ASCS -- Las Cruces Schools	54
25	Analysis of Change in Auditory Discrimination Following Phase I and Phase II Treatment ASCS -- Las Cruces Schools	55
26	Analysis of Change in Articulation Following Phase I and Phase II Treatment, ASCS -- Las Cruces Schools	56
27	Mean Latencies ASCS	57

TABLE OF FIGURES

Figure		Page
1	Von Foerster's Model for Self-Organizing Systems	29
2	A Model for Linguistic Self-Organization	31
3	A Model for an Automated Stimulus Control System	31

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Research in the automation of speech and language therapy at New Mexico State University began in the fall of 1962 with support provided by the Research Center of the University. Activities between September 1964 and January 1968 were supported by the U. S. Office of Education. Technically, this report covers the activities carried out between September 1965 and January 1968 under Project No. 3192, "Speech and Language Therapy Under An Automated Stimulus Control System." However, for the sake of clarity and continuity, activities and findings from the earlier research are incorporated in this report.

The research reported in the following pages was made possible by the cooperation extended by the administrative officials of New Mexico State University, the Las Cruces Schools, the Atlanta Speech School, Inc., the Dixon State School, and the Veterans Administration Hospital, Atlanta, Georgia. Equal credit is due to the speech and hearing specialists in these settings, particularly Mrs. Suzanne Storr, Dr. Paul A. Rittmanic, Dr. Rolland Metzger, Dr. Robert L. McCroskey, and Dr. Joseph H. Keenan.

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Finally, Mr. Kay E. Rigg, Assistant Director of the Communications Research Laboratory, who filled multiple roles over the years, provided the continuity that overcame the unscheduled delays and unanticipated difficulties that are certain to arise in any research project.

I. SUMMARY

Research in the automation of speech and language therapy at New Mexico State University began in September 1962. This report covers activities from that time until January 1968. Technically, this report is submitted to cover the activities carried out between September 1965 and January 1968 under Project No. 3192, "Speech and Language Therapy Under An Automated Stimulus Control System."

A. Problem

Since no predictable change in the number of children and adults in need of and not receiving speech therapy nor in the shortage of certified speech clinicians was available, a change in therapeutic procedures was proposed. Programmed instruction and teaching machines had made a marked impact in human learning situations, in many instances being employed in remedial situations where inappropriate responses had to be replaced with appropriate ones. Garrett believed that adequate information and techniques were available for the shaping of acceptable articulatory patterns in cases of functional misarticulation and for the shaping of language patterns, with programmed instruction presented through an automated system.

A. L. Holland had shown that the discrimination training in articulation therapy for /s/ could be presented as programmed instruction through a teaching machine. She observed an improvement in the articulation of /s/ following training, but the changes were not statistically significant. She had also reported that most of her subjects exhibited a spontaneous vocalization of those items composed of words in the successful auditory discrimination training program. These two factors led Garrett to hypothesize that functional misarticulation was amenable to self-correction through programmed instruction. During 1962-63, an Automated Speech Correction Program teaching machine was designed and built. Programmed instruction was developed for the auditory discrimination and for the self-correction of /s/, /ʃ/, /ɛ/, and /ʊ/. Sixteen college students exhibiting functional misarticulation were used in testing the teaching machine and programmed instruction, with four subjects being assigned to each of the four programs.

The subjects completed the auditory discrimination tapes in an average of one hour and ten minutes. The self-correction tapes for vowels were completed in an average of two and one-half hours, and the self-correction tapes for consonants were completed in an average of three and one-half hours. The mean response accuracy on all tapes fell just under 90%. Upon completion of the program, each subject could produce on demand the phoneme studied, exhibited a marked improvement in his production of that phoneme in test sentences, and exhibited some positive degree of transfer of the phoneme to his connected speech. The only therapist aid provided was a brief explanation of an acceptable articulatory posture of the given phoneme between the auditory discrimination and the self-correction phases.

B. The Automated Speech Correction Program

The first major study in the application of programmed instruction in teaching machines to the automation of speech correction was carried out in the Las Cruces Public Schools in 1964-65.

1. Objectives

The major objective was the development, application, and evaluation of programmed instruction for the rehabilitation of functional misarticulation of children in the elementary school with the application being made through a completely automated system.

2. Procedures and Results

a. The Teaching Machines

A relatively low-priced teaching machine was developed and tested. The five ASCP machines proved to be relatively reliable under the extreme demands which were placed upon them. Since a major purpose of this study was an investigation of the effectiveness of different presentation modes of programmed instruction in speech correction, four modes of presentation were available in the ASCP machine.

In the auditory discrimination phase, Phase I, the machines presented the programmed instruction under a "correction" and a "non-correction" technique. Under the "correction" presentation the subject was reinforced with a 600 cycle pure tone in the earphones and the teaching machine advanced automatically to the next frame. An incorrect response resulted in the child receiving a "raspberry" or saw-tooth tone in the earphone, and the teaching machine automatically rewound to the beginning of the missed frame and presented it again. Under the "non-correction" procedure, the subject received a pure tone reinforcer for a correct response and the teaching machine automatically advanced to the next frame. For an incorrect response, the subject received a saw-tooth tone and the teaching machine "froze" for a three second period before proceeding to the next frame.

Two modes of presentation were investigated during the self-correction phase, Phase II. Under the rewind presentation, the subject listened to a master stimulus and recorded his own version; the teaching machine then automatically rewound and presented the master version and the subject's recorded version for his audition. Under the non-rewind treatment, the subject listened to the master stimulus and then heard his production at an amplified level through the earphones without an actual recording being made.

b. The Programmed Instruction

Skinnerian straight-line (intrinsic) programming was used throughout. A self-organizing system model was introduced as was the concept of stimulus control programming. The frames of the programmed instruction were so devised that the desired stimulus or "target phoneme" was presented in the choices of "Present or Not Present," "First or Second," "Neither," "Both," "First, Second, or Last," "How Many," and "Correctly Articulated or Not Correctly Articulated." The context in which the target phoneme appeared -- phonemic, semantic, and syntactic -- was constantly varied and kept as broad as possible within the 600 frames of the auditory discrimination training program. The order of presentation was determined by establishing an "Ease Index" derived from studies from speech science, information theory, frequency of phoneme and word appearance, and frequency and type of articulatory error. The selected criteria were then programmed for an IBM 1620 computer and the computer-generated syllable and word lists formed the basis of the programmed instruction

c. General Design

A modified randomized blocks design was used with 100 children as subjects. This design allowed the examination of the different combinations of treatment included in the study.

d. Sample

One hundred children from the Las Cruces Public Schools were selected with the restrictions that each child be essentially normal in physical condition, emotional adjustment, intelligence, hearing acuity, articulatory structure, and be at least 7 years 9 months of age but under 12 years of age at the beginning of treatment. The subjects were ranked from high to low according to the summed raw scores of the discrimination and articulation tests used, and then assigned randomly to the control and experimental groups.

At the end of treatment, a significant change in articulation was found, as indicated below in Table 1.

TABLE 1
ANALYSIS OF CHANGE IN ARTICULATION FOLLOWING
TOTAL AUTOMATED SPEECH CORRECTION PROGRAM TREATMENT (t)
ASCP -- LAS CRUCES SCHOOLS -- 100 SUBJECTS

MEASURE	I	II	III	IV	V	VI	VII	VIII
Templin-Darley	$<.01$	$<.001$	$<.02$	$<.01$	$<.01$	$<.01$	NS	$<.001$
$\bar{\Delta}$ Change: T-D	6.53	5.46	5.86	4.81	6.32	7.93	4.18	8.07

The positive findings from the study clearly indicated that functional misarticulation in normal children between the ages of 7 years 9 months and 12 years of age could be treated successfully with the Automated Speech Correction Program. The discrimination task in

Phase I and the production task in Phase II were apparently well separated insofar as the programmed instruction itself was concerned. No significant statistical difference was found in the performance of the subjects receiving the "correction" as opposed to the "non-correction" auditory discrimination treatments. The same finding was true for the self-correction activities under the rewind and the non-rewind presentation. Holland's finding that auditory discrimination on a given phoneme could be achieved in some 20% of the time ordinarily allocated in clinical activity was reaffirmed for the second time by Garrett. The general conclusion was that a correction presentation for auditory discrimination combined with a non-rewind presentation for self-correction offered the maximum in clinical usefulness with these particular programs.

C. The Automated Stimulus Control System

1. The Teaching Machines

In addition to an increase in reliability, the teaching machines were redesigned so that the subject could respond at any time within a frame regardless of the direction of tape travel and still receive immediate reinforcement. A mechanical lock-out device was installed that prevented the subject from pushing more than one button at a time, and a state detection circuit was added which insured that only one pulse would be generated by pushing a response button. The reliability criterion met by the machines before being placed in the field was 2500 serial frames without a machine failure. Three of the machines in the field were equipped with M&M dispensers and associated logic circuitry, and one was equipped with a synchronized visual slide presentation system.

2. The Programmed Instruction

The programmed instruction for the Automated Stimulus Control System studies took more than a year to prepare. The Skinnerian straight-line format was retained as was the basic form provided by the computer-generated word lists. An error analysis of the ASCP programmed instruction was made, and their sources were eliminated. Far more rigid control was exercised in the introduction of contrasting phonemes, the influence of adjacent phonetic elements, the effect of frequency of use and familiarity, the semantic influence of word choice, and the "depth" of the syntactic material.

"Button-Training Tapes" were written to teach the button-pushing task to the subjects prior to their work with the programs proper, and the instructional sections or "Training Tape Leaders" were rewritten and expanded.

3. Dixon State School

a. Objective

The major objective in this setting was a study of the application and evaluation of programmed instruction for the correction of functional misarticulations in educable mentally retarded children.

b. Design

The experimental design allowed for the comparison of the relative effectiveness of programmed instruction and teaching machines with one experimental group receiving a pure tone reinforcer and the second experimental group receiving the pure tone reinforcer together with a randomized fixed-ratio M&M reinforcer set at 40%. A third group of subjects received traditional therapy from certified speech clinicians.

c. Subjects

Thirty-two mentally retarded patients with functional misarticulation problems were selected as subjects. All subjects were in normal physical condition, without severe emotional maladjustment, ranked in the 50-75 I.Q. range, had normal auditory acuity, possessed normal structural relationships of the articulatory organs and essentially normal movement, showed misarticulation of at least two General American phonemes, and were between 8 and 16 years of age.

d. Results

The effect of the ASCS treatment on the articulation of educable mentally retarded subjects is shown below in Table 2.

TABLE 2
ANALYSIS OF CHANGE IN ARTICULATION FOLLOWING
PHASE I AND PHASE II TREATMENT
ASCS -- DIXON STATE SCHOOL

MEASURE	TREATMENT	MEAN DIFF.	S.E. DIFF.	*t*	P
Templin - Darley Articulation	M&M and Tone Reinforced	5.08	3.63	1.46	NS
	Tone Only Reinforced	4.98	2.07	2.50	$<.05$
	Traditional Therapy	10.05	4.78	2.10	NS

The ASCS programs were effective when only the pure tone was used as a reinforcer. The ASCS programs were not effective when pure tone plus M&M were used for reinforcement. Reports from Dixon indicated that the M&M dispenser served as a distraction to the learning task, and this impression was confirmed by examination of latency and error on subjects receiving this treatment. Another important finding was that the subjects who received traditional therapy did not show a significant change although their mean change on the Templin-Darley test was greater than the subjects receiving the ASCS treatment. Too, the total time involved in traditional therapy was greater than that for the ASCS treatments.

4. Atlanta Speech School, Incorporated

a. Objective

The major objective in this setting was a study to determine whether children with aphasia (language disorders) would profit from automated instruction with respect to articulatory skill, and rate and accuracy of response in auditory discrimination training.

b. Design

The study was designed so that a comparison could be made of the relative effectiveness of the Automated Stimulus Control System on aphasic children with normal hearing as opposed to aphasic children with questionable hearing. Reinforcement for both groups was provided by the combination of pure tone and M&M dispenser, with the latter set for 60%.

c. Subjects

Twenty subjects were selected from the 46 children enrolled at the Atlanta Speech School, Incorporated. The subjects ranged in age from 4 years to 14 years. Half had normal hearing and half had auditory acuity that was less clearly defined and for whom there was a possibility of moderate reduction in acuity. Standard performance type tests indicated an I.Q. range of 81 to 131, with a mean of 102, and a median of 101.

d. Results

The results from the studies at the Atlanta Speech School are incomplete. One subject was eliminated from the study, and complete data is available on only nine of the nineteen remaining subjects. The nine subjects include both children with normal hearing and those with questionable hearing. The positive results experienced by these children is given in Table 3 below.

TABLE 3
ANALYSIS OF CHANGE IN ARTICULATION FOLLOWING
PHASE I AND PHASE II TREATMENT
ASCS -- ATLANTA SPEECH SCHOOL, INC.

MEASURE	TREATMENT	MEAN DIFF.	S.E. DIFF.	*t*	P
Templin-Darley Articulation	M&M and Tone Reinforced	7.89	2.00	3.95	$<.01$

5. Veterans Administration Speech Pathology and Hearing Service

a. Objective

The major objective was an exploratory study to determine whether adults diagnosed variously as oral apractics, peripheral dysarthriacs, or aphasics would profit from automated instruction of the type offered by the ASC System.

b. Design

The limited and unpredictable number of subjects available for the study prohibited an experimental design.

c. Subjects

Six Veterans Administration out-patients and one in-patient who were diagnosed variously as having mild to severe aphasic symptoms were the subjects.

d. Results

The auditory discrimination phase of the treatment was completed by three subjects. The self-correction phase was not used with any subject. No clinical change in speech or language behavior was observed for any of the patients. An analysis of the responses of the patients who completed the Phase I treatment indicated that their responses were not random, but the pattern of responses could not be identified.

6. Las Cruces Schools

a. Objective

The objective in this setting was a clinical evaluation of the effectiveness of the ASC System when the System was placed in the public school setting and administered solely by regular school personnel.

b. Design

The clinical evaluation of the ASC System did not require an experimental design. In order to secure more information about the effectiveness of the programmed instruction, a design comparing presentation by ASCS teaching machines to presentation by clinician was evolved.

c. Subjects

Three elementary schools in the Las Cruces system each provided twenty subjects. One group at each school received the ASCS programmed instruction on teaching machines under regular school personnel. The other group at each school received the ASCS programmed instruction in groups of 2 to 4 children from a certified speech clinician.

d. Results

The positive results in articulatory change produced by both treatments is shown in Table 4 below.

TABLE 4
ANALYSIS OF CHANGE IN ARTICULATION FOLLOWING
PHASE I AND PHASE II TREATMENT
ASCS -- LAS CRUCES SCHOOLS

MEASURE	TREATMENT	MEAN DIFF.	S.E. DIFF.	t	P
Templin-Darley Articulation	Machine Administered	8.24	1.67	4.94	$<.001$
	Clinician Administered	8.31	1.95	4.19	$<.001$
Depth Articulation	Machine Administered	6.89	1.63	4.25	$<.001$
	Clinician Administered	8.44	1.35	6.28	$<.001$

One major finding from this study was that programmed instruction presented by teaching machine without the supervision of a certified speech clinician could produce a positive change in the articulatory pattern of children with functional misarticulation. The second major finding was that a speech clinician could present the programmed instruction to groups of children as efficiently as the teaching machine presents the same material to an individual child.

D. Implications

1. A self-correcting technique of speech therapy presented through a completely automated system is available for normal, educable mentally retarded, and brain injured children. This means that the public school clinician can be relieved of much of the burden now imposed by functional misarticulation problems. This further means that children in settings where certified speech clinicians are not available can receive help for functional misarticulation through programmed instruction and teaching machines, with the treatment being carried out by regular school personnel.

2. The programmed instruction of the ASC System can be presented by the speech clinician without use of the teaching machine. This means that auditory discrimination training and the preliminary shaping of correct articulation can be accomplished in approximately 20% of the time now ordinarily devoted to these activities.

3. The general success resulting from use of the ASC System should have a positive effect upon public school therapy in general. Programmed instruction and teaching machines are the offspring of learning

theory and automation, and a wider use of benefits available from learning theory based therapy and automated techniques should result in more systematic and efficient therapy as clinicians become aware of the advantages offered by these techniques.

4. Training programs in colleges and universities should also be influenced by the results of these studies together with the growing literature in the use of behavioral modification techniques for speech and language therapy. The result should be a generation of speech clinicians who are practicing a "science" rather than an "art" of speech correction.

5. The final major implication has to do with the utilization of systems analysis in speech and language therapy. The term "system" was included in the title of the latter studies in this research because a systems concept was involved. The relative effectiveness of different kinds of therapy, the relative cost of therapy, and the relative time requirements of different therapies were all available for evaluation. Moreover, the effect of an automated system in producing change in human behavior was also under study, and it was shown that a man-machine interface can have positive therapeutic values.

6. Many further research studies can be derived from the results reported. The director and assistant director of this research have serious reservations about the theoretical gap which now exists between the discrimination and motor theories of articulation acquisition. For example, one way to examine this question is by comparing the changes which result in the articulation of children who receive only the self-correction phase of the program with those receiving the auditory discrimination phase while a third group receives both treatments.

It should also be possible to supplement the ASC System materials with programmed instruction which would provide an even greater transfer of the target phoneme into connected speech. The effectiveness of the present straight sequence of presentation should be compared with the effectiveness of that sequence when it is presented under a contingency management paradigm.

Interesting insights into discrimination in articulation acquisition could result through studies which incorporated classical verbal learning tasks as pre- and post-test measures or as periodic paralleled measures of the effectiveness of programmed material designed to produce a clinically acceptable change in speech behavior.

II. THE AUTOMATED SPEECH CORRECTION PROGRAM

A. The Problem

By 1962, the number of children and adults in need of but not receiving speech correction was a matter of general knowledge (5, 6). Too, the shortage of certified speech clinicians was well known (4, 20). Where clinicians were available, the time-consuming aspects of individualized and small-group therapy compounded the problem of providing remedial services. Since no important change in the number in need of therapy nor in the number of clinicians available appeared predictable (20, 55, 73), some change in therapeutic procedures was indicated.

Programmed instruction and teaching machines, the off-spring of operant conditioning and automation, had made a marked impact in human learning situations by 1962 (19, 50, 84, 94, 140, 142). In many instances, they had been employed in remedial situations where inappropriate responses had to be replaced with appropriate ones (54, 84, 143, 150). Garrett believed that adequate information and techniques were available for the shaping of acceptable articulatory patterns in cases of functional misarticulation and for the shaping of the language patterns, through programmed instruction presented in an automated system.

The implications of positive findings from this research were numerous. The major implication would come from the availability of an automated system of programmed instruction for the training of auditory discrimination for speech sounds and for the self-correction of functional misarticulation. Such a system could relieve public school clinicians of their greatest source of cases, thereby enabling them to concentrate their efforts upon those aspects of speech correction which are not yet amenable to automation. The availability of such a system also implied that schools without the services of a speech clinician could provide speech correction services by utilizing the system with proper safeguards. The implications were also important for mentally retarded and brain injured children whose speech and language needs can be met only through a long period of therapy. An automated system of programmed instruction would provide the optimal learning situation in a format which would allow for the repetitive and patient procedures needed by these individuals. The final implication lay with the availability of programmed instruction which could be presented by the clinician without reliance on the teaching machine. It was felt that the availability of such material would provide the clinician with a timesaving, systematic, and very productive approach to speech therapy.

From a theoretical viewpoint, it was expected that the research would provide further understanding of the applications of operant conditioning, programmed instruction, automated techniques, and computer based research for the whole field of speech rehabilitation.

B. The Pilot Study

By 1962, speech had come to be viewed as a learned process resulting from approximation under operant conditioning with the articulatory aspect conceived of as a servo-mechanism governed by automatic controls (33, 125, 138, 152, 162). From this viewpoint, functional misarticulation is learned behavior which results when the feedback system approves articulatory productions which are in fact incorrect; the servo-mechanism and control system are adequate, but they have been programmed through inappropriate learning with faulty data.

The first application of teaching machine procedures, *per se*, to speech correction was made by A. L. Holland at the University of Pittsburgh in 1960 (56, 58). She developed three programs for discrimination training in articulation therapy. Her study compared a procedure which sampled as wide a variety of speech sound discrimination tasks as possible, and which was patterned after Powers' discrimination training procedure (112); a second procedure which provided extensive training in speech sounds which were not imbedded in a phonetic context (isolated speech sounds); and a third procedure which provided extensive training in discriminating correct from misarticulated sound production within words. All three of the procedures were programmed on the principle of gradual progression or approximation. The presentations were made on a "teaching machine" which included the experimenter as the logic source for feedback or reinforcement.

The results produced by the program patterned on Powers' procedure showed improvement in the auditory discrimination of /s/, the sound under study, at the .01 level of confidence. All three programs produced an improvement in the articulation of /s/, but the changes were not significant. No significant differences appeared on the general tests of articulation and auditory discrimination. Holland concluded that "a clinical method has been shown to be adaptable for automation. The same advantages which pertain to automated teaching in general--increased efficiency and effectiveness--also pertain here." (56)

Holland had reported in her dissertation that most of her subjects exhibited a spontaneous vocalization of those items in the Powers' procedure program which were composed of words. That report, together with the improvement in /s/ articulation seen by Holland, led Garrett to hypothesize that functional misarticulation was amenable to self-correction through programmed instruction. During 1962-63, an Automated Speech Correction Program Machine was designed and built at New Mexico State University which provided for a completely automated presentation of programmed instruction on magnetic tape. Programmed instruction was developed for the auditory discrimination of / ʃ /, / ɛ /, and / ʊ /, following the pattern endorsed by Holland for /s/; and programmed instruction was developed for the self-correction of /s/, / ʃ /, / ɛ /, and / ʊ /, based upon the programming philosophy advanced by J. G. Holland (59) and J. I. Evans, *et al*, (30, 31). The sequence was from isolated phoneme to word in Phase I, and from isolated phoneme to short phrases and sentences in Phase II. In the fall of 1963, a pilot study to test the programmed instruction, including A. L. Holland's /s/ program, and the ASCP machine was conducted at New Mexico State University. Sixteen college students exhibiting functional misarticulation were used in the study, with four subjects being assigned to each of the four programs.

The terminal behavior specified was (1) 90% accuracy of response on Phase I (Auditory Discrimination) and Phase II (Self-Correction) of the programmed tapes, and (2) an observable change in the production of the target phoneme as evaluated by clinical judgment. Change was judged by ability to produce the target phoneme in isolation and in words upon demand, by the ability to produce the phoneme in selected sentences from the Fairbanks' Phonetic Inventory (34), and by ability to carry the improvement into conversational speech.

The subjects received one tape each day. Time required for the completion of Phase I tapes averaged one hour and ten minutes; the time required for completion of Phase II tapes averaged two and one-half hours for the vowels and three and one-half hours for the consonants.

Response accuracy on Phase I tapes varied from 86.3% to 97%, and on Phase II from 85% to 93%. The mean in both cases fell just under 90%.

Upon completion of the program, each subject could produce upon demand the phoneme he had studied, exhibited a marked improvement on his recording of the Phonetic Inventory sentences, and exhibit some positive degree of transfer of the target phoneme into his connected speech. The only therapist aid provided was a brief explanation of an acceptable articulatory posture of the target phoneme between Phase I and Phase II.

Recognizing the restricted nature of the study, it was concluded (1) that the auditory discrimination of speech sounds could be accomplished through automation, thus freeing the clinician from this task while reducing the usual training period by some 70%; and (2) that the automated self-correction of functional misarticulation was feasible and could produce much improved though not perfect articulation of the phoneme studied in some three and one-half hours (42).

The Automated Speech Correction Program Machine, as it existed in prototype, was composed of four basic units: (1) a Hathaway Model N-2 Signal Generator; (2) a Hunter Model 116, Series D, Interval Timer; (3) a T-1616 Electronic Control Wollensak Stereo Tape Recorder; and (4) a Programming Unit. The programming unit, which was designed and built at New Mexico State University, was the unique part of the ASCP machine and provided the circuitry needed for coding the logic functions of the system. This four part unit provided for two processes; first, the internal coding of magnetic tapes for use on the teaching machine; and second, the employment of the unit as a teaching machine.

At the 1963 American Speech and Hearing Association Convention, the scientific exhibit of the Automated Speech Correction Program was given the award for the outstanding scientific exhibit, the award being made on the basis of excellence of presentation, originality of work, and teaching value of the exhibit (45).

C. The Automated Speech Correction Program Study

Beginning in September 1964, under contract with the Cooperative Research Bureau, U.S. Office of Education, the first major study in the application of programmed instruction and teaching machines to the automation of speech correction was carried out in the Las Cruces Public Schools by New Mexico State University. This study was Project No. 2749, "The Correction of Functional Misarticulation Under an Automated Self-Correction System." (44).

1. Objective

It was hoped that the following objectives would be achieved:

a. The major objective of this project was the development, application, and evaluation of programmed instruction for the correction of functional misarticulation of children in the elementary school with the application being made through a completely automated system known as the Automated Speech Correction Program (ASCP).

The specific aims under this objective were:

1). The development of programmed tapes based upon Skinnerian straight-line programming for training in the auditory discrimination of speech sounds and for the self-correction of functional misarticulation.

2). A comparison of the effectiveness of the auditory discrimination training of the ASCP when the material was presented in a "correcting" and in a "non-correcting" teaching machine.

3). A comparison of the effectiveness of the self-correction phase of the ASCP in changing articulation patterns when a transitional period of individualized subject-therapist correction was provided between the auditory discrimination training phase and the self-correction phase, and when no subject-therapist correction was provided.

4). The further testing, refining, and/or modifying of the design and operation of the prototype ASCP machine.

b. The secondary objective of this project was an evaluation of the retention of articulatory skills acquired on the ASCP under conditions of (1) no reinforcement, (2) ASCP auditory discrimination tapes reinforcement only, (3) ASCP auditory discrimination and self-correction tapes reinforcement, and (4) under a specially devised classroom teacher program for speech improvement.

2. Procedures and Results

a. Modification of the ASCP Machine

One purpose of this project was to investigate the feasibility of a relatively low-priced instrument which would be capable of presenting programmed instruction automatically and would be sufficiently reliable to be placed in a school situation where no technician was available for servicing. Within these limitations, a low-priced, four-channel tape recorder with electronic control of rewind was selected and a new system of instrumentation for the control unit was devised. Fifty-pin plugs at the rear of the control unit established the proper circuitry for the presentation of the corrective or non-corrective treatments. The new control unit utilized digital circuitry which analyzed the number of code impulses associated with each stimulus frame on the tape and compared these with the signal generated by the button which the subject pressed to signify his selection of response to the stimulus.

During Phase I (auditory discrimination), both a "correction" and a "non-correction" mode of presentation were employed. Under the "correction" presentation when a subject's response was correct, he was reinforced with a 600 cycle pure tone in the earphones, and the teaching machine advanced automatically to the next frame. In the event of an incorrect response, the subject received a "raspberry" or saw-tooth tone in the earphone, and the teaching machine automatically rewound to the beginning of the missed frame and presented it again. Under the "non-correction" procedure, for a correct response the subject received the pure tone reinforcer through the earphones, and the teaching machine automatically advanced to the next frame. In the event of an incorrect response, the subject received the saw-tooth tone through the earphones, and the teaching machine "froze" for a three second period before proceeding to the next frame.

During the self-correction phase of the program, Phase II, two modes of presentation were employed. The rewind presentation consisted of having the subject listen to the master stimulus and record his own version, following which the teaching machine automatically rewound and presented the master version and the student's recorded version for his audition. The non-rewind treatment consisted of having the subject listen to the master stimulus and then receive his production at an amplified level through the earphones as he produced it, without an actual recording being made.

During the study, the average number of frames presented on each of the five ASCP machines was 15,300. The ASCP machines proved to be relatively reliable under the extreme demands which were placed upon them. Several parts within the tape recorder did fail during the time that the units were within the schools and appropriate modifications were made. The one design error which appeared lay in the half-second period at the end of each frame during which the control circuitry was going into operation for the correction procedure in Phase I training. If the subject pressed a button during this period, the rewind was erratic and the program would reverse an unpredictable number of frames before the counting circuitry stabilized and started the forward motion again. This problem appeared only with those subjects who were hesitant in their responses and delayed responding. In all other aspects, the ASCP machines were successful. The four-button choice circuitry fulfilled all needs of the programmed instruction and allowed for the finest type of stimulus-control discrimination available in a low-priced instrument (28, 29, 62, 64).

The data processing system developed for the ASCP study employed direct telephone line connections between each ASCP machine in the five schools cooperating in the project and the Communications Research Laboratory at New Mexico State University. An Ampex FR-100 provided a permanent record of the correctness and latency of each subject's responses. This record was reduced using a Beckman 0-2 mcps electronic counter and a Beckman digital printer.

b. Development of Programmed Tapes

Skinnerian straight-line (intrinsic) programming (30, 132, 133, 134, 135, 136) calls first for an operational definition of the terminal behavior desired (14, 90). Materials are then selected which will lead to the specified behavior and are reduced to a large number of extremely small steps or programmed frames. These frames or items are ordered in difficulty to guide the subject through a series of approximations to the desired behavior. Skinnerian programming calls for each subject to advance through the entire sequence of programmed items, to respond to each item, to be given immediate confirmation of the correctness of his response, and to progress at a self-paced rate. The terminal behavior desired for each subject receiving the programmed tapes was a change in behavior so that the subject could correctly identify and produce the target phoneme presented in the respective programmed tapes.

The phonetic materials for the programmed instruction were partially generated by an IBM 1620 digital computer at New Mexico State University. This approach was a variant of concepts discussed by Coulson (19) and by Leiner and Youden (80) as adapted to the IBM 1620 (69). An original intent of this research was to incorporate into the computer program, and subsequently into the programmed instruction, an "Ease Index" derived from pertinent information concerning confusibility of phonemes, relative intelligibility of phonemes, developmental order and frequency of phonemes, frequency of misarticulation, and word frequency. This information was to come from such sources as Fairbanks (33, 34), French (40), Fant (35, 36), T. Bangs (11), Black (12), Thorndike and Lorge (148), Voelker (153), Snow (137), Templin (145), O'Connor (105), Owens (107), Prins (116), House (68), Lehiste and Peterson (79,110), Denes (22), Wang and Fillmore (156), Savin (126), Roe and Milisen (121), Dickson (23), Halle and Stevens (53), Stevens and House (139), and Winitz (162).

Two factors prevented the incorporation of all the available information. First, the modifications on the IBM 1620 were not completed as scheduled with the result that disc storage and high speed print-out were not available. Second, much of the research reported was not in a form applicable to the purposes of the project. For example, the common denominator in confusibility and intelligibility studies has to do with the signal-noise ratio. Since the purpose of this study was to insure intelligibility insofar as signal-noise ratio was concerned, the signal was presented to the ear of the subject at some 20 db above ambient noise and some 60 db above system noise. Similarly, knowing that the syllable nucleus is shorter when followed by a voiceless consonant and longer when followed by a voiced consonant was of little practical use since the cueing of the stimulus in the programmed tapes included marked variations in loudness, pitch, and stress. The various developmental studies, spectrographic analyses, and the like, similarly proved to be beyond either the storage capacity of the computer and/or of a nature not amenable to numerical translation.

Studies of the frequency of use of phonemes were of value. Of the various studies and their interpretations, the one most obviously fitting the needs of this project was that carried out by Denes (22). Denes' analysis was in a matrix form which was readily adaptable to the "probable word" model being used in the computer program. To insure a maximum contrast with the target phoneme, the Denes' frequency data was biased so that nasals and then stops were given a priority in the earlier portions of the computer-generated word lists.

The majority of misarticulation studies are not quantified although they agree generally in the patterns of misarticulation reported. The study by Snow (137) does present quantitative data, with a frequency listing of correct production as opposed to moderate distortion, severe distortion, omission, and substitution by phoneme. In the computer program, Snow's frequencies provided the basis, with some bias built in to allow for the frequencies reported in other studies. Additionally, the program was so biased that phonemes involved in omission or substitution did not appear until a specified number of frames had been generated, and then they could appear only in the proportion of their specified frequency of appearance in the misarticulatory pattern programmed in the computer. The model used is presented in Table 5.

TABLE 5
A MODEL FOR "PROBABLE WORDS"

$P_{cvc} = E_1 E_2 E_3 = WB\ C_1\ \overline{WB}\ V_1\ \overline{WB}\ C_2\ WB$

$E_1 = WB\ C_1\ \overline{WB}$ (The probability that a word boundary occurs before a given consonant but does not occur after the consonant.)

$E_2 = (WB\ C_1\ \overline{WB})\ V_1\ \overline{WB}$ (The probability that a given vowel occurs after C_1 and that a word boundary does not occur after the vowel.)

$E_3 = (WB\ C_1\ \overline{WB}\ V_1\ \overline{WB})C_2\ WB$ (The probability that C_2 occurs after V_1 and that WB occurs after C_2.)

A sample of the computer-generated word lists is given in Appendix A.

With the computer-generated lists providing the basic sequence, the actual programmed instruction was written with modifications being incorporated for the necessary cueing, fading and reviewing of the target phoneme, with the phoneme being presented within a large variety of contexts, and with frequency of word usage being incorporated.

The programmed instruction followed the form found most effective by Audrey Holland and used by Garrett in his pilot study. This type of programming was the one which had proved successful in evoking a spontaneous production of the target phoneme with the spontaneous production apparently resulting from the operation of a stimulus control process within the program. Stimulus control training in other aspects of human learning has shown that an increase in the ability to discriminate between stimuli can also produce an improved production even though no specific practice has been made for that production (29). Stimulus control in the sense used here is a matter of presenting programmed items so that the probability of proper discrimination is at an optimum level (64, 76, 77, 78).

Several important changes were incorporated in the programmed instruction used in the automated speech correction program study. The presentation of isolated consonants was discontinued, and the target phoneme always appeared within a syllabic context. Holland's (56) and Garrett's (42) earlier programs had been based upon a 3-button teaching machine. Conversations with Evans and Homme (29, 62) convinced Garrett that a 4-button model teaching machine would provide greater control of the choices available in the discrimination training phase of the program. The presence of a 4-button choice meant that a "not present" response could be included.

A frame time of 6.9 seconds was selected, meaning that some 9 stimuli would be presented each minute.

The learning tasks presented in the programmed instruction progressed from simple to difficult over some 600 auditory discrimination frames. The Phase I auditory discrimination program was broken into seven separate tapes as follows:

Tape I-1: Presented the target phoneme in a nonsense syllable with the phoneme appearing initially, finally, and medially. The subject's response was to press button 1 if he heard the target phoneme, and to press button 2 if he did not hear the phoneme.

Tape I-2: Presented the phoneme in the initial position. Two nonsense syllables, which later became sense words, were contrasted. The subject's task was to press button 1 if he heard the target phoneme in the first syllable or to press button 2 if he heard the target phoneme in the second syllable. As Tape I-2 progressed, he was presented with the additional discrimination task of pressing button 3 if the target phoneme appeared in both syllables; and the fourth task added was one of pressing button 4 if the target phoneme did not appear in either syllable.

Tape I-3: Presented the same four-button task for the target phoneme in the final position.

Tape I-4: Presented the same four-button task with the target phoneme in the medial position.

Tape I-5: Presented individual words or nonsense syllables in which the subject was to indicate how many times the target phoneme appeared in the stimulus. Ordinarily this was a matter of a one phoneme or a two phoneme choice; occasionally, the phoneme appeared three times in a word; and at times the target phoneme was not in the stimulus. Progression within the tape was again from simple to difficult with the initial items presenting only the target phoneme and with later items incorporating phonemes which could be confused with the target phoneme.

Tape I-6: Presented the task of identifying the position of the phoneme within a word, with presentations of the phoneme being made in initial, medial, and final positions, and without the phoneme being presented.

Tape I-7: Presented the task of selecting the correctly articulated phoneme in a given word which was presented in a paired presentation of correct and incorrect articulation. Again, the task was sequential; the first items on this tape were as obvious in their contrast as was possible, while, toward the end of the tape, the discrimination task was much more difficult. Also included in this tape was the task of identifying the paired words which were both articulated correctly.

The Phase II tapes for self-correction were also seven in number and called sequentially for the identification and production of the target phoneme in the following sequences:

Tape II-1: In nonsense syllables.

Tape II-2: In nonsense syllables and monosyllabic words.

Tape II-3: In nonsense syllables, monosyllabic and polysyllabic words.

Tape II-4: In monosyllabic and polysyllabic words, patterned into simple phrases.

Tape II-5 and II-6: In monosyllabic and polysyllabic words, patterned into phrases and short sentences.

Tape II-7: In phrases and sentences.

The recording of the programmed instruction tapes was done in such a manner that the signal-noise level met the minimums noted above, and utilized three male and three female voices recording in essentially random order. The individuals making the recordings all had General American dialects, spoke with clear articulation in their everyday speech, and did not provide unwanted cues on the tapes. While the tapes were not equal to "studio" standards, they were better than the intelligibility conditions found in a public school classroom situation.

c. General Design

A modified randomized blocks design (27) was used with 100 children as subjects. All subjects were selected with the restrictions that each child must:

1. Be in normal physical condition and not have exhibited severe emotional maladjustment as evidenced by the student's cumulative record or as judged by the appropriate school authorities.

2. Be of normal intelligence as determined by an I.Q. score of 90 or above on his cumulative record and as confirmed by the Ammons Full-Range Picture Vocabulary Test (7) and/or the Peabody Picture Vocabulary Test (25).

3. Respond to all frequencies in a sweep hearing check of 250, 500, 1000, 2000, and 4000 Hz at 15 db HL.

4. Not possess any structural or mechanical abnormality of the articulatory organs which are judged to be associated with the functional misarticulations.

5. Show misarticulation of at least two phonemes.

6. Be at least 7 years 9 months of age but under 12 years at beginning of treatment.

All subjects were selected as indicated above and then ranked from high to low according to the summed raw scores from the Templin Short Test of Sound Discrimination (145), a specially designed "depth discrimination test", the Templin-Darley Screening Articulation Test (146), and a specially designed "depth articulation test". Upon the basis of this ranking, blocks of ten subjects each were formed. The ten subjects in each block were assigned at random to one of the eight treatments with two subjects from each block being assigned to control. Analysis of the pre-test scores showed that the pre-treatment group variance was non-significant ($P > .8$).

TABLE 6
GENERAL DESIGN
AUTOMATED SPEECH CORRECTION PROGRAM

	TREATMENT	AUDITORY DISCRIMINATION	TRANSITION	SELF-CORRECTION
I	$A_1B_1C_1$	Correction	Transfer	Rewind
II	$A_1B_1C_2$	Correction	Transfer	Non-Rewind
III	$A_1B_2C_1$	Correction	Non-Transfer	Rewind
IV	$A_1B_2C_2$	Correction	Non-Transfer	Non-Rewind
V	$A_2B_1C_1$	Non-Correction	Transfer	Rewind
VI	$A_2B_1C_2$	Non-Correction	Transfer	Non-Rewind
VII	$A_2B_2C_1$	Non-Correction	Non-Transfer	Rewind
VIII	$A_2B_2C_2$	Non-Correction	Non-Transfer	Non-Rewind
IX		CONTROL		

In all ASCP treatments the programmed tapes were presented to the subjects on an ASCP machine. The Phase I auditory discrimination tapes were presented by either the "correction" or "non-correction" mode. The "correction" presentation consisted of a re-presentation of a stimulus when the subject made an incorrect response. This re-presentation continued until the subject made a correct response. The "non-corrective" type of presentation consisted of the subject being informed by means of a saw-tooth tone that his answer was incorrect and having the entire ASCP system turn off for a period of three seconds.

During the Phase II self-correction phase of the program, similar presentations were made. Subjects assigned to the "rewind" treatment received an automatic rewind after they had recorded their version of a master stimulus. They could listen to this recording for a maximum of five times before being required to proceed to the next item. The "non-rewind" treatment consisted of the subject receiving an amplification of his oral production over the earphones as he produced it.

Following the completion of Phase I and within the original randomized assignment, subjects were given a "transfer" or "non-transfer" treatment. Those receiving transfer were given individual or small group therapy based upon placement and kinesthetic cues. When in the opinion of a qualified clinician they were producing the given phoneme correctly 50% of the time upon demand, they began Phase II training. The non-transfer subjects were given only a brief 5 to 10 minute period of instruction which, again, was based upon placement and kinesthetic cues and then proceeded immediately to Phase II.

The administrative officers of the Las Cruces Public Schools selected five of the fourteen elementary schools in the system for participation in this project. A survey was made to select children who exhibited functional misarticulation problems and a random selection of children was made from the original survey population. Although the original design had called for each school to function as a block providing 20 experimental subjects, the screening of the schools' population resulted in the following distribution:

TABLE 7
DISTRIBUTION OF SUBJECTS
AUTOMATED SPEECH CORRECTION PROGRAM

SCHOOL	TOTAL	EXPERIMENTAL	CONTROL
C. C.	26	18	8
H. H.	21	18	3
M. P.	21	16	5
U. H.	18	16	2
V. V.	14	12	2
	100	80	20

All of the subjects met the following conditions: (1) Normal physical condition and not exhibiting severe emotional maladjustment; (2) Normal intelligence as defined by an I.Q. score of 90 or above on the Peabody Picture Vocabulary Test; (3) Normal hearing as evidenced by a sweep hearing check at 250, 500, 1000, 2000, and 4000 Hz at a fixed 15 db HL level (in cases of extremely noisy testing conditions, 20 db was the HL used); (4) Not possessing any structural or mechanical abnormality of the articulatory organs. The requirement that each subject exhibit misarticulation of at least two phonemes was not met by 15 subjects. Judging that multiple misarticulation was more important than age range, seven subjects were incorporated into the experimental sample who were slightly younger or slightly older than the specified 7 year 9 month to 12 year age span.

Data from the statistical analysis in the project were secured from the following instruments: the Templin Short Test of Sound Discrimination for general sound discrimination ability; a specially designed auditory discrimination test for each target phoneme studied; the Templin-Darley Screening Test for general articulatory skill; and, a specially designed articulation test for each target phoneme studied. The Oseretsky Tests of Motor Proficiency (24) were eliminated as a ranking device during preparatory stages of the project since exploratory testing showed that the motor skills tested by the Oseretsky had no direct bearing upon the operation of the four button format of the ASCP machine.

The auditory discrimination tests were recorded under controlled conditions and presented by tape recorder with every effort being made to equalize the testing situation from school to school. Recordings were made of each subject's responses to the articulation tests, and these recordings were used to establish each subject's numerical rating. The auditory discrimination tests were administered pre-Phase I, post-Phase I, and post-Phase II. The articulation tests were administered only pre-Phase I and post-Phase II to avoid the possibility of training effect contaminating the score on these particular tests. Subjects were assigned to the various treatments by a consultant.

d. Results

The major objective of this project was evaluated through the following null hypotheses:

(1) The ASCP will not produce changes in the auditory discrimination of the children with functional articulatory problems. This hypothesis was rejected following Phase I as shown in Table 8 below:

TABLE 8
ANALYSIS OF CHANGE IN AUDITORY DISCRIMINATION
FOLLOWING PHASE I TREATMENT ASCP

MEASURE	TREATMENT	MEAN DIFF.	S. E. DIFF.	t	P
Templin Discrimination	Correction	5.68	1.13	5.03	<.001
	Non-Correction	3.75	0.81	4.63	<.001
Depth Discrimination	Correction	1.00	0.33	3.03	<.01
	Non-Correction	0.43	0.44	0.95	NS

(2) The ASCP auditory discrimination training group which receives treatment under the "correction" treatment will not demonstrate more change than the group which receives the "non-correction" treatment. This hypothesis was not rejected. Both treatments produced statistically significant changes in the Templin as noted above, and a significant change for the Depth Discrimination Tests of those subjects receiving the "correction" treatment on the ASCP machine. (Certain clinical qualifications are presented later under the section on Conclusions and Implications.)

(3) The ASCP will not produce changes in the articulation patterns of children with functional articulatory problems. This hypothesis was rejected following Phase II as shown in Table 9:

TABLE 9
ANALYSIS OF CHANGE IN ARTICULATION FOLLOWING PHASE I AND PHASE II TREATMENT ASCP (t)

MEASURE	I	II	III	IV	V	VI	VII	VIII
Templin-Darley Articulation	$<.01$	$<.001$	$<.02$	$<.01$	$<.01$	$<.01$	NS	$<.001$
Depth Articulation	$<.01$	$<.001$	$<.01$	$<.01$	$<.05$	$<.02$	$<.05$	$<.01$
$\bar{\Delta}$ Change: T-D	6.53	5.46	5.86	4.81	6.32	7.93	4.18	8.07

(4) The ASCP self-correction group which receives a transitional period of individualized therapy between the auditory discrimination phase and the self-correction phase will not demonstrate more change than the ASCP self-correction group which does not receive transitional therapy. This hypothesis was not rejected. In addition to the results shown in Table 9, an analysis of variance indicated that no significant difference appeared in the performance of the subjects receiving transitional therapy as opposed to those who did not receive transitional therapy: F=1.95 or less.

The secondary objective of the project, which was to be an evaluation of the retention of articulatory skills under four different treatments, was not achieved. The delay in delivery of parts for the construction of the ASCP machines resulted in a loss of approximately two months from the projected time schedule; sufficient time remained only for the completion of the study proper. However, the programmed instruction material on articulation and phonetics for the cooperating classroom teachers who were to have conducted the speech improvement retention activities, had been written, tested, revised and retested, and was ready for use. A copy is provided in Appendix B.

3. Conclusions and Implications

a. The positive findings of this study indicated clearly that functional misarticulation in children between the ages of 7 years 9 months and 12 years could be treated successfully with the Automated Speech Correction Program. Of the 80 subjects assigned to the experimental treatments, all except three completed both phases of the program. Two subjects were dropped because of excessive absences and a subsequent inability to complete the program within the school year; only one subject was dropped because of inability to respond to the teaching machine and programmed instruction. Of the 77 subjects who completed the experimental treatments, 61 subjects or 79.2 percent, demonstrated improved auditory discrimination as measured by the Templin Short Test of Sound Discrimination. Of the 77, 72 or 93.4 percent, demonstrated improved articulation as measured by the clinical judgment of recordings of the Templin-Darley Screening Test.

Five phonemes were presented in programmed instruction form to the experimental subjects: [s], [r], [l], [θ], [ʃ]. Following Phase I, item analysis of the Templin Short Test indicated that all of the programs produced major changes in the subjects' ability to discriminate the nonsense syllables in the Templin. This was an unexpected result since it was anticipated that the subjects would show the greatest improvement in the discrimination of the target phoneme for the program which they received. One possible explanation is that the large number of nonsense syllables in the programs used in this study provided training for the task posed by the Templin Short Test. Another explanation is that the use of stimulus control programming in a discrimination setting provided broader training than had been anticipated. Whatever the reason, the improved performance has definite clinical implications in that auditory discrimination training of this type is much more effective than the traditional ear training techniques ordinarily employed in speech correction programs, providing both a saving of time and a broader response.

The discrimination task in Phase I and the production task in Phase II were apparently well separated insofar as the programmed instruction was concerned. This was evidenced in two ways: first, the scores on the Templin Short Test and the Depth Discrimination Test deteriorated following Phase II treatment to the point that no significant difference was available between the pre-ASCP and post-ASCP treatment although an actual and impressive mean increase remained; second, three subjects in the transition therapy treatment did not achieve 50% production of their target phonemes on demand prior to their beginning Phase II treatment, and rather than dropping them from the study, it was simply noted that these three subjects had not met criterion. The production of these three subjects remained below criterion during their work on the first five tapes of Phase II. But on Tapes II-6 and II-7, they suddenly improved their production to well above criterion. Since the experimental subjects generally demonstrated a decrease in measured discrimination ability following Phase II, it can only be assumed that the improvement in the production of the three non-criterion subjects was the result of the Phase II program.

Another matter of clinical interest appeared in the improved articulatory performance of the subjects in the control group, a finding also reported by Dickson (23). Statistically, the control group showed improvement, as evidenced by the *t* test, of $<.01$ on the Templin-Darley and of $<.001$ on the Depth Articulation Test. The mean change, however, was 2.49 as opposed to 6.14 for the experimental subjects. Rather than raising any question concerning the effectiveness of the ASCP, a count of subjects not showing improvement indicates that the ASCP was very effective: seven of the control subjects, or 35%, showed no improvement. In contrast, all of the experimental subjects except 5, or 6.6%, showed positive changes.

It is interesting to note that the finding that 65% of the control subjects showed improvement without therapy correlated to the percentage of neurotic individuals Eysenck reported as showing improvement without psychotherapy (32). The 93.4% of the ASCP subjects who showed improvement also correlated well to the 90%-95% successes reported for the behavioral modification techniques by Wolpe (163) and others (67, 74, 75, 151, 169).

b. The lack of a significant difference in the performance of the subjects receiving the "correction" as opposed to the "non-correction" auditory discrimination treatments agreed with findings in other areas of programmed instruction. Apparently the important factors involved were the employment of small step, response, and immediate confirmation; not the re-presentation of the missed item. While the statistical analysis dictated this conclusion, there was a clinical impression reported by all of the graduate assistants involved that the subjects receiving the correction auditory discrimination treatment showed the greater facility in their spontaneous articulatory productions.

c. The four-button multiple choice discrimination task was one of sufficient complexity to call for the institution of a training tape in the operation of the four buttons of the teaching machine following Tape I-2. Tape I-2 introduced the sequence of locating the sound in the first word, second word, both words, or neither word. Questioning by the graduate assistants during Tape I-2 work revealed that the subjects did understand what was required as far as the discrimination task itself was concerned, but that they were experiencing difficulty in adapting their button-pushing behavior. A short twenty-frame tape with explanations and examples served to overcome this particular problem.

d. Information from the statistical analysis indicates that the subjects were at their peak of auditory discrimination following Phase I. At the same time, 50 of 77 experimental subjects, or 65 percent, were also spontaneously vocalizing the target phoneme. And 21, or 54 percent, of the 39 subjects scheduled for transitional therapy were also producing their phonemes 50 percent of the time upon demand without having received any individualized therapy. Of the remaining 18, 15 reached criterion in less than a half hour of therapy. The implication of these findings is that a public school therapist might well rely upon some type of automated presentation for auditory discrimination training which utilizes stimulus control programming and then proceed directly into group therapy rather than employing the self-correction phase of the ASCP. Certain timesaving features would be lost, but it is entirely possible that a strong transfer to connected speech could be made at this point in the total therapy program.

e. Special attention needs to be directed to the stimulus control format of the programming employed. The effectiveness of this type of programming is evidenced in the broad general improvement in auditory discrimination. The nearest comparable auditory discrimination program is that of A. L. Holland which did not produce a generalized response (56). An obvious part of the discrimination task present in the current programs is the four button choice which in information theory terms calls for the resolution of an uncertainty of 2 as opposed to the resolution of an uncertainty of 1.585 under Holland's program: $[H = \log_2 \Sigma pi's]$ (119).

f. The time required to complete the ASCP treatment is summarized in Table 10:

TABLE 10
TIME SPENT ON ASCP

TREATMENT	TIME IN MINUTES	
	Mean	Range
Phase I Correction	138	93 to 312
Phase I Non-Correction	98	86 to 121
Phase II Rewind	210	190 to 280
Phase II Non-Rewind	74	--------

The obvious timesaving factor in the non-correction, non-rewind presentations is a matter of importance when a large number of subjects are in need of therapy. At the same time, as was noted above, a strong clinical impression remains that the total productiveness of the correction treatment for auditory discrimination is a factor which must not be overlooked. On the other hand, the clinical impression concerning the Phase II treatments was that the subjects became much more restless while dealing with the rewind function than with the non-rewind presentation. Overall, it would appear that a correction presentation for auditory discrimination combined with a non-rewind presentation for self-correction offers the maximum in clinical usefulness with these particular programs.

g. The analysis of errors made on all subjects during Phase I treatment is summarized in Table 11:

TABLE 11
PERCENT ERROR ON PHASE I ASCP

TAPE	MEAN	RANGE
I - 1	19.0	3.3 - 30.0
I - 2	20.4	5.6 - 108.8
I - 3	24.8	2.2 - 110.0
I - 4	21.8	1.1 - 77.7
I - 5	20.4	13.3 - 80.0
I - 6	25.5	6.8 - 125.0
I - 7	30.9	9.5 - 99.0

The "ideal" error rate usually advocated in programmed instruction is 10%. Analysis and revision of the programmed instruction should produce a lower error rate, and such an analysis and revision is in line with the majority of current thought about the writing of programmed instruction. At the same time, the significant changes produced by the ASCP programs indicated that the program was a very effective method of influencing the behavior of children with functional misarticulation problems. Clinically, the error rate cannot be a significant factor since the total behavioral changes were positive.

The results of the ASCP study were presented at the 1965 convention of the American Speech and Hearing Association (46), and a Summary Report was submitted to the U.S. Office of Education (44).

h. By 1965, applications of operant conditioning and behavioral modification techniques had been used to shape the verbal behavior of such varied subjects as stutterers (39, 123),psychotics (70), young children (124), autistic children (89), and normal adults (81). Black had produced a self-administered testing-training unit for use by college students (13). The increased use of operant conditioning techniques carried a major implication for automated therapies -- operant procedures are quantified, and quantified procedures can be automated.

III. THE AUTOMATED STIMULUS CONTROL SYSTEM

The activities carried out between September 1965 and January 1968, at which time this final report was submitted, were carried out under contract with the U.S. Office of Education, Bureau of Education for the Handicapped, as Project No. 3192, "Speech and Language Therapy Under an Automated Stimulus Control System."

A. Model

The feedback model of the Automated Speech Correction Program was essentially that proposed in 1954 by Fairbanks (33). Under that model, the articulatory aspect of speech is conceived of as a servo-mechanism governed by automatic controls. Under this model, functional misarticulation is viewed as learned behavior which results when the feedback system approves articulatory productions that are in fact incorrect; the servo-mechanism and control system are adequate, but have been programmed through inappropriate learning with faulty data.

The same concept was presented by Robert Milisen (99) in August 1964, at the University of Wisconsin-Milwaukee's Conference on "Articulation and Automated Speech Correction" at which Milisen and Garrett (43) were the invited lecturers. Applications of the feedback concept of language learning and the re-learning of language by aphasics had also been made by Wepman (159), Weinrich (157), and Castle (16), applications which were essentially analogous to the original feedback model.

Whether dealing with "language," "speech," or "articulation," *per se*, the model underlying this concept calls for acquisition to result from what is essentially trial-and-error learning in which the reinforced responses produce approximations of the desired terminal behavior--in this case, the acceptable dialect of the speech community in which the individual is reared. The model also calls for the approximations being governed by a feedback system either within and/or without the learner.

During June 1964, at the 9th Annual AFOSR Summer Scientific Seminar on Communication Cybernetics, Garrett and Rigg, the Assistant Director of this project, became aware that the proposed model was inadequate, particularly in the assumption that the feedback process alone governed the articulatory aspect of speech. R. Gregory presented findings from his laboratory which indicated that feedback in eye movement is not a simple sequence of sensory input--neural interpretation--motor impulse--muscle movement--feedback. Gregory showed that the brain monitors eye movement on the basis of the motor impulse itself, not on the actual movement. His explanation was that a "command monitor" system exists within the brain which operates separately from and takes precedence over kinesthetic feedback (52). This information ~~was~~ detailed later in his monograph *Eye and Brain* (51). Similar findings from the work of H. Vandertrail in Holland were also reported (154). Vandertrail, analyzing the motor activity of handwriting, found that a pre-programmed pulse train was responsible for the actual movement during writing, and that feedback, per se, provided information only after the act--not during it. Although no parallel research in speech had been reported, parsimony dictated that articulation is similarly pre-programmed and controlled; and that feedback must be viewed as an after-the-fact report.

A more adequate model came from Von Foerster who spoke at the same Seminar on "Self-Organizing Systems" (154).

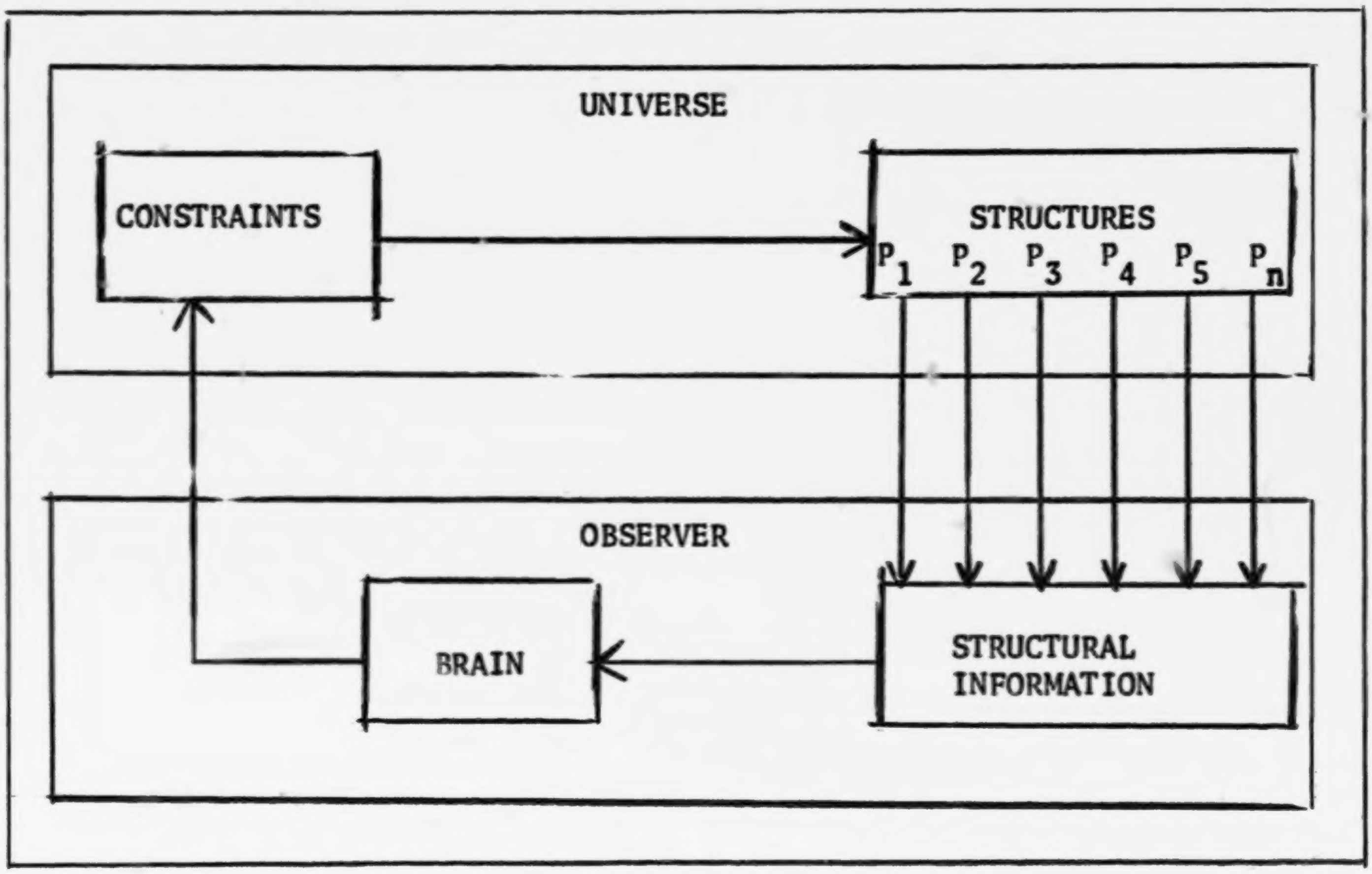

FIGURE 1

VON FOERSTER'S MODEL FOR SELF-ORGANIZING SYSTEMS

A self-organizing system, as conceived by Von Foerster, is any system in which certainty increases as a function of its own operation. A system must satisfy three basic conditions in order to be considered self-organizing. First, it must be non-ergodic; the statistics of the set of all similar systems cannot predict the behavior of a non-ergodic system, nor can the statistics of a single system be generalized to predict the behavior of the set of all similar systems. Second, the system must be non-Hamiltonian; the laws of motion and their more sophisticated transformations do not predict the gross behavior of the system. Third, the system must be non-conservational; energy flows through the system, modifying it in such a manner as to increase the internal organization of the system. At first glance, this would appear to be a contradiction of the second law of thermodynamics which states that order must decay as a function of time; however, when a self-organizing system is considered in its total environment, it is seen that entropy does gradually increase and that the system can externalize the effect of entropy only for a relatively short time.

The self-organizing system operates within a universe in which constraints have generated structures (spiral nebulae and the English language, for example). The self-organizing system receives energy from these structures which it perceives as structural information. The system then reduces this information, discarding what is trivial and increasing its internal organization in order to compute and predict the future of its universe of observation. The system then compares these computed predictions to new structural information and reduces the uncertainty associated with the various probability states of the structures within its universe. In this manner the system is able to map the structures of its universe and determine the constraints which generated them. The system thus can be considered an isomorphic representation of its universe because it presents that universe in another system.

Von Foerster posited two major measures of a self-organizing system:

I. There is removal of uncertainty.

II. There is an increase of organization with the system.

Language acquisition with the child exhibits both of these characteristics: interacting with an unknown universe in which anything is probable and where all probabilities are equal, the child derives structural information from his surroundings, maps (or stores) the information, predicts upon the basis of that information, and checks his prediction with the constraints of the linguistic universe with which he is interacting. As the cycle is repeated, uncertainty decreases and organization increases until an isomorphic representation of the linguistic universe is derived, at which time the child is a member of his linguistic community.

To emphasize the "functional" aspects of human communication, Von Foerster's model was modified as indicated in Figure 2 on the following page. In this "Model for Linguistic Self-Organization", "Structural Information" encompasses the receptive function from end organ through neural reception; "Map" encompasses the neural function of storage and integration; "Prediction" encompasses the expressive function of retrieval and transmission from neural level through motor action.

The effect of the addition of the Automated Stimulus Control System to the self-organization model is shown in Figure 3 on the following page.

FIGURE 2

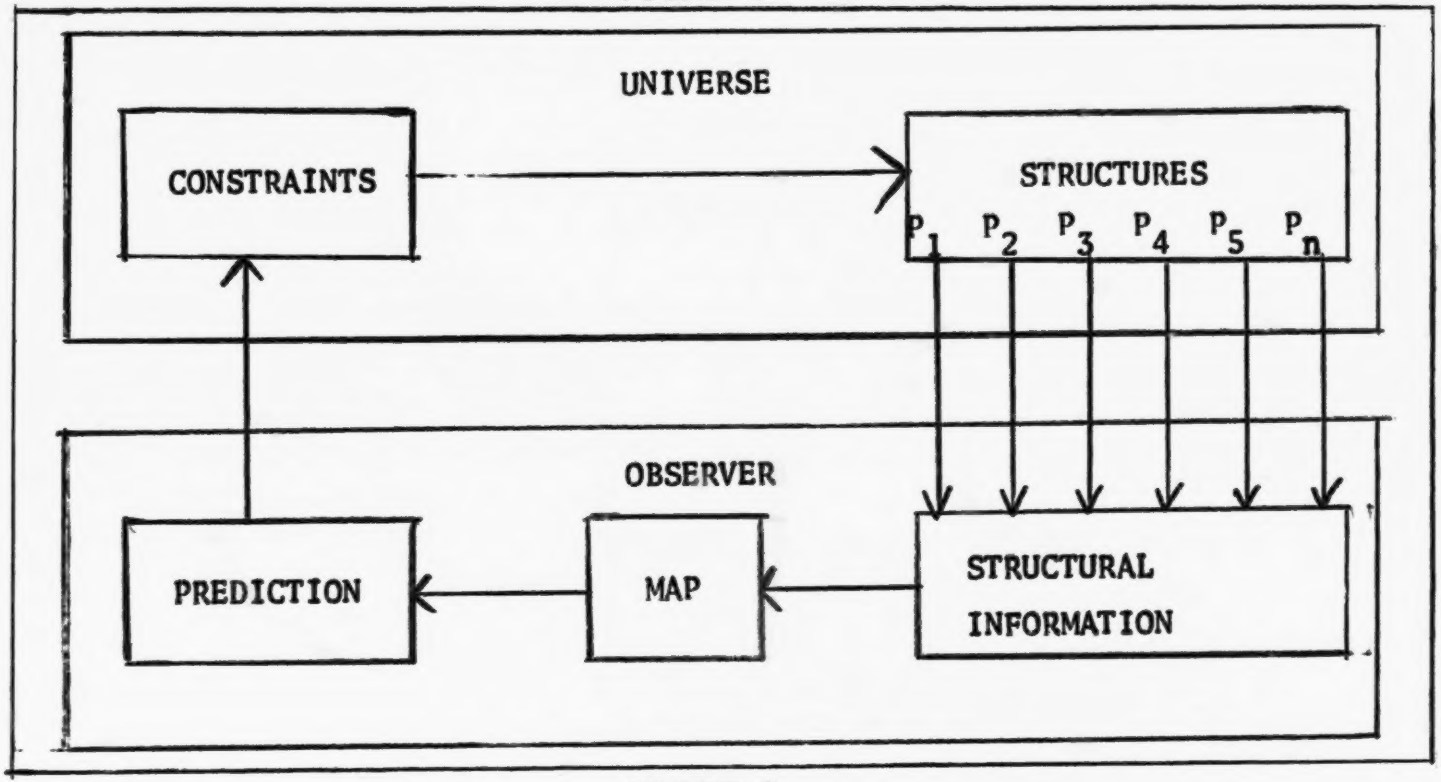
UNIVERSE
CONSTRAINTS
STRUCTURES
P_1 P_2 P_3 P_4 P_5 P_n
OBSERVER
PREDICTION
MAP
STRUCTURAL INFORMATION

FIGURE 2
A MODEL FOR LINGUISTIC SELF-ORGANIZATION

In Figure 3, "A Model for an Automated Stimulus Control System," the traditional feedback circuit is that which connects "Prediction" to the ASC System; the pressing of a given switch on the ASCS Machine is a response which is immediately confirmed as correct or incorrect, thus providing reinforcement.

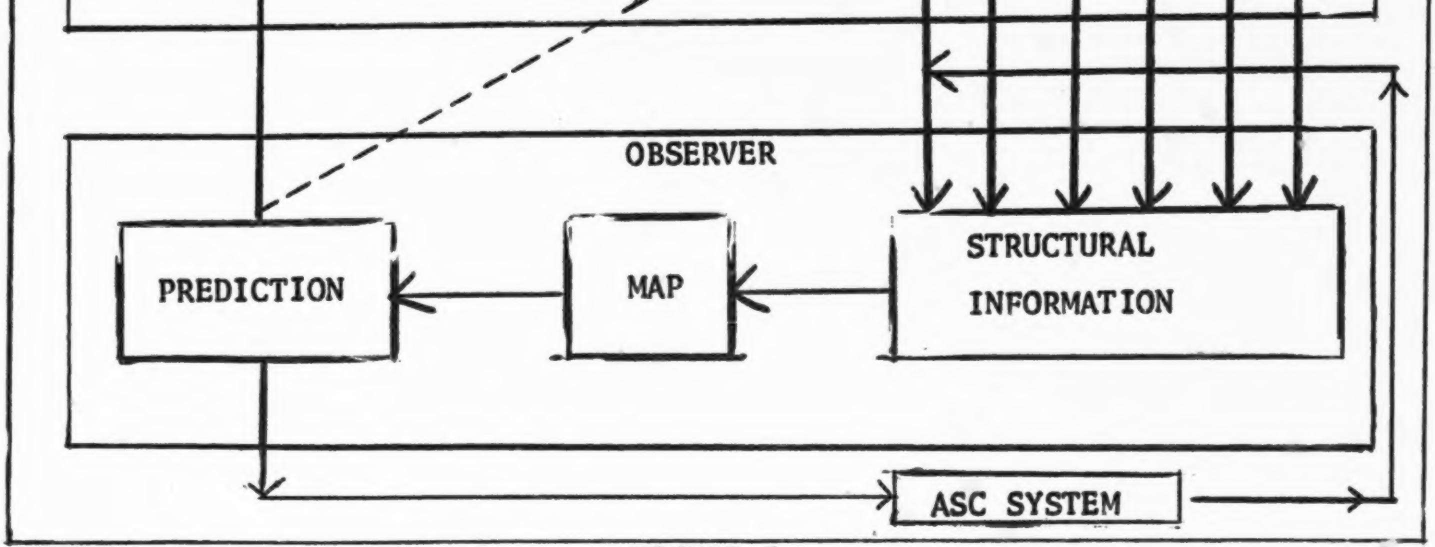
UNIVERSE
CONSTRAINTS
STRUCTURES
P_1 P_2 P_3 P_4 P_5 P_n
OBSERVER
PREDICTION
MAP
STRUCTURAL INFORMATION
ASC SYSTEM

FIGURE 3
A MODEL FOR AN AUTOMATED STIMULUS CONTROL SYSTEM

The major modification to the original feedback concept lies in the connection of the ASC System to the interface between the "Universe" and the "Observer." As was indicated earlier, the predictive response of the subject is pre-programmed at the neural level. The response, whether viewed as correct or incorrect, is the best offering of the subject, "best" in the sense of being the most probable according to his information. Since direct manipulation of the neural circuits was obviously not available, the interface between the "Universe" and the "Observer" was chosen as that point most likely to afford an avenue to the receptive function of the system. In effect, the ASC System acts to optimize the structure in question, to make it most probable of the probabilities available, and thus bring about a reorganization of structural information, mapping, and predicting within the subject.

An example of the utility of the self-organizing system model is demonstrated in its application to experimentation being carried out by Mowrer (102). Mowrer is experimenting with a prosthetic device to modify /r/ production in school children, and is relying upon the children to monitor their own productions. In the opinion of Garrett and Rigg, the device serves the same purpose as programmed instruction in optimizing a given structure; and reliance on the children to monitor their own productions is reliance on the children as self-organizing systems.

The term "system" was included in the title of the Automated Stimulus Control System studies for two reasons. The first was the adaptation of the self-organizing systems mode. Research in this area had been recent and varied, and had definite implications since a man-machine interface was being employed for therapeutic purposes. Typical references are Ackoff (1), Ashby (9), Fitts (38), McCulloch (87), Pask (108), Von Foerster (155), and Yovits (167, 168).

The second reason the term "system" was used was that the studies in the automation of speech and language therapy were designed to produce information about the relative effectiveness of different types of therapy, about the relative time requirements for different therapies, and, by implication, about the relative cost of different therapies. The systems analysis approach to the evaluation of programs arose at the close of World War II and had been applied broadly in the technical community to study the effect of technological innovations in the military establishment and in the automation of industry, as typified by Eckman (26), Malcolm (91), and others (103, 82).

Systems analysis would shortly be in wide use in studying the effects of technological innovations in education, as is shown by Cook (18), DeCecco (21), Glaser (48), Kaiman (72), Rath (118), Silvern (131), Stolurow (141), and others (111, 117).

B. Stimulus Control

The optimization of probability at the interface between "Universe" and "Observer" is, in the terms of learning theory and programmed instruction, brought about by stimulus control (S+). Moreover, the acceptance of the concept of stimulus control shifts the emphasis in programmed instruction from the shaping of behavior by reinforcing an emitted response to the shaping of behavior by altering the stimulus control of a response class. In Homme's words (64), "Now many programers are taking seriously the proposition that the responses we are dealing with are usually already in the subject's repertoire, and that the programer's job is to bring these responses under appropriate stimulus control."

Implicit in stimulus control is discrimination. The traditional approach, as derived from the Hull-Spence kind of behavior theory, is that for S+ to acquire control, sufficient inhibitory potential must be built up in the presence of S- through extinction. Or, that for discriminative control to emerge, inappropriate responding or errors in S- is a necessary condition. [Amsel's chapter in Teaching Machines and Programmed Learning supports this insistence upon errors (8).]

Laboratory justification for errorless learning came from Terrace (147) who showed that not only can discrimination training be achieved without errors, but that better discrimination control is established when training is without errors. In programmed instruction itself, stimulus control through discrimination training had produced, through the method of multiple choice discrimination programming, a situation in which production of a response is evoked strictly through discrimination training. After influencing the number-making behavior of children through discrimination training alone, Evans concluded that "Apparently what is happening is that the child is learning to discriminate between good and bad productions of a response, and is thereby enabled to monitor the adequacy of his own corresponding production." (28) Similar results had been reported by Morton and Lane (101) in teaching a second language. With individuals exhibiting functional misarticulation, A. Holland (56) had found that her programmed instruction in auditory discrimination unexpectedly resulted in the spontaneous production of the phoneme under study. Garrett (42, 44, 46), who expected spontaneous production, carried that production on into a self-correcting technique. In Garrett's opinion, both his and Holland's programs were effective because proper stimulus control in discrimination learning was present.

What occurs within the subject himself remains a matter of conjecture. Theoretically, explanations can be offered in such terms as Wyckoff's "observing response" (164), Homme's "self-probing response"(64), or as Von Foerster's "selective self-organization" (154, 155). Empirically, stimulus control of discrimination training within the framework of programmed instruction does produce a situation wherein the organism can be brought by essentially errorless learning to a point where he is capable of monitoring and modifying his own productions.

As was indicated earlier in the discussion of the ASCP study, the self-organizing system model and stimulus control programming resulted in modifications of that study during its preparatory period. The ASCP Machine and programmed instruction were modified so that a four-button multiple choice discrimination task would be available; the frames were devised so that the target phoneme was presented in the choices of "Present or Not Present," "First or Second," "Both," "Neither," "First, Second or Last," "How Many," and "Correctly Articulated or Not Correctly Articulated." The context in which the phoneme appeared -- phonemic, semantic, and syntactic -- was constantly varied and kept as broad as possible within the some 600 frames available. The order of presentation of all phonemes was determined by establishing an "Ease Index." The selected criteria were then programmed for an IBM 1620 computer, and the computer-generated syllable and word lists formed the basis for the programmed instruction tapes.

C. The Programmed Instruction

The programmed instruction for the Automated Stimulus Control System study took more than a year to prepare. A complete description of the factors considered in preparing the scripts would be both boring and unnecessary, but an explanation of the general rationale could provide guidance for others who wish to prepare this type of programmed instruction.

The general format for training auditory discrimination through programmed instruction had been clearly established by Holland. Garrett's pilot study and his Automated Speech Correction Program study had demonstrated the usefulness of this type of programming in providing the necessary discrimination base upon which a self-correction procedure could be built. His studies had also demonstrated that the programming of self-correction was feasible. The major problems that had to be resolved in preparing the ASCS scripts came from the difficulty of combining findings from speech science and those coming from the field of program writing, the reconciling of clinical judgments of effectiveness of programs as compared with an error rate higher than that ordinarily approved of in program writing, and the development of a format which would insure comparable programming from one phoneme to another.

A major influence was provided by the presence of four skilled programmers who had developed their skills during the earlier phases of this research. The presence of these individuals meant that errors of oversight and in procedure could be caught before the programmed instruction was recorded.

From the viewpoint of programmed instruction evaluation, the error rate was considered to be too high on the ASCP programs. Some of the error rate was directly attributable to programming techniques which introduced contrasts before the subjects were adequately shaped to handle the more difficult choices. Other errors had resulted from the inclusion of items for the sake of phoneme contrast rather than for the sake of clarity in presentation of the target phoneme. For example, the word "access" was included to provide two /s/ sounds. Many of the children who were subjects in the ASCP study had parents employed at the White Sands Missile Range, and these children heard the term "access road" frequently. Nonetheless, semantics was more powerful than phonetics and the children frequently heard "exit" or "accident" instead.

A far more rigid control was exercised in the beginning portions of each auditory discrimination program to insure that natural intelligibility prevailed. For example, Wang-Fillmore (156) had found that / ɛ / was especially intelligible with plosives and nasals. By using plosives and nasals paired with / ɛ / in contrast to the target phoneme paired with another highly intelligible but contrasting vowel, both intelligibility from a speech science viewpoint and cueing from a programming viewpoint could be had.

A careful control was exercised throughout the programs so that the target phoneme appeared approximately the same number of times in all comparable programs, i.e. consonant or vowel programs. A careful control was also exercised in presenting the nonsense -- sense items. In the consonantal tapes, for example, Tape I-1 was 90 frames long and consisted entirely of nonsense syllables. The first 45 frames were CV combinations with possibly confusable phonemes not being introduced until frame 25. Frames 46 to 70 were VC combinations with confusable phonemes not being introduced until frame 60. Frames 71 to 90 were VCV combinations with possibly confusable phonemes being introduced at random in 50% of the frames. Sense words appeared in Phase I-1 tapes only when no alternative syllabic configuration was available.

Tapes I-2 through I-4, in which the target phoneme was presented sequentially in the initial, final, and medial position, were written so that the first 20 items were nonsense pairs, the next 25 items included occasional sense words in opposition to nonsense words with the target phoneme being in the nonsense item, and the last 45 items consisting of paired stimuli in which possibly confusable phonemes appeared at random with at least 30% of the frames consisting solely of nonsense items. In these tapes nonsense syllables were repeated only when there was no alternative, and most of the sense words came from the first five hundred words of the Thorndike-Lorge List (148). The employment of nonsense syllables resulted from the accepted fact that identification of a given phoneme in a nonsense presentation is easier than identification of that phoneme in a sense presentation. At the same time, allowance had to be made for the semantic implications of the sense words which were used, and Owens' work had shown that words from the first five hundred items in Thorndike-Lorge were not ordinarily confused (107).

Another change in the programming format came from the recognition that a portion of the error source in the ASCP study rested with the button-pushing task. In that study, on Tape I-1, the subject was to indicate the presence of the target phoneme by pressing button 1 and the absence of that phoneme by pressing button 2. He later was called upon to use button 4 to indicate "not present." This had obviously introduced a secondary learning task and had interfered with the acquisition of good button-pushing behavior. In the ASCS scripts, this problem was alleviated by using button 4 at all times to indicate "not present."

The Phase II tapes for self-correction were subjected to equally rigorous revision and control. A definite distribution of the target phoneme was established; a nonsense--sense ratio was established; and a controlled sequence was followed for the progression from nonsense to monosyllabic to polysyllabic words, and finally to the introduction of phrases and sentences.

Studies by Martin (95, 96, 97), based upon Yngve's work (165, 166), had clearly demonstrated that the syntactic form of the sentence had a marked effect upon retention and reproduction of that sentence. A number of drill sentences from Fairbanks' Voice and Articulation Drillbook and the ASCP scripts were analyzed using the Yngve formula, and it was apparent that the "depth" of sentence structure was frequently in competition with the primary goal of providing drill with a specific phoneme. The Phase II scripts were controlled so that sentence length and/or form could not interfere with the primary objective of providing sequential materials for self-correction practice.

Much work had and was being done in the application of information theory and linguistics to the general field of communications. Bach (10), Chomsky (17), Fant (35, 36), Fitts (38), Malmberg (92), Miller (100), Saporta (125), Martin (95, 96, 97), Reza (119) and Shannon (129) are illustrative of those who had influence on the philosophy which guided the preparation of the ASCS programmed instruction.

Throughout the rewriting process, Denes' study (22) continued to provide information which controlled the frequency of appearance of all phonemes; and the Snow study (137) continued to provide information which controlled the introduction of predictably confusable phonemes.

The computer-generated word lists which had provided a basis for the ASCP study programs were automatically incorporated in the design of the ASCS programs.

Two vowels, / ɪ / and / ɛ /, and six consonants, /s/, / ʃ /, / ð /, /r/, /l/, and /v/, were selected for programming. The / ð / and /v/ were programmed rather than the / θ / and / f / since they were more easily discriminated on tape, and since analysis of the earlier ASCP study showed that control of a phoneme predictably led to control of its cognate.

The auditory discrimination program was presented on seven separate tapes, as follows:

Tape I-1: Presented the target phoneme in nonsense syllables with the phoneme appearing initially, finally, and medially. The subject's response was to press button 1 if he heard the target phoneme, and to press button 4 if he did not hear the phoneme. Frames 1 to 45 were CV, 46 to 70 VC, and 71 to 90 VCV. Frame time was 2.2 seconds.

Tape I-2: Presented the target phoneme in the initial position. Two syllables were contrasted in each frame. The subject's task was to press button 1 if he heard the target phoneme in the first syllable, or to press button 2 if he heard the target phoneme in the second syllable. At frame 21 the task of pressing button 3 when the target phoneme was present in both items was introduced, and at frame 41 the task of pressing button 4 when the target phoneme was not present in either item in the frame was introduced. Frame time was 3.5 seconds.

Tape I-3: Presented the same four-button task for the target phoneme in the final position. Frame time was 3.5 seconds.

Tape I-4: Presented the same four-button task for the target phoneme in the medial position. Frame time was 3.5 seconds.

Tape I-5: Presented the task of identifying the position of the target phoneme within a stimulus, with both nonsense and sense words being used. Presentations of the phoneme were made in initial, medial and final positions, and without the target phoneme being present. Frame time was 2.8 seconds.

Tape I-6: Presented nonsense syllables and individual words with the subject instructed that he was to indicate how many times the target phoneme appeared in the stimulus. Ordinarily, this was a matter of a one phoneme or a two phoneme choice; occasionally, the phoneme appeared three times in the word; and at times the target phoneme was not in the stimulus. Frame time was 2.8 seconds.

Tape I-7: Presented the task of selecting the correctly articulated phoneme in a given word which was presented in a paired presentation of correct and incorrect articulation. Also included in this tape was the task of identifying paired words which were both articulated correctly, and paired words which were both articulated incorrectly. Frame time was 3.5 seconds.

Throughout the program the difficulty of the task was sequential with the first items on each tape being clearly cued and with the difficulty of discrimination increasing throughout the tape. Except for Tape I-1, the subjects always worked with a four-button choice.

The programmed tapes for the self-correction phase were also seven in number and called sequentially for the identification and production of the target phoneme in the following sequences:

Tape II-1: In nonsense syllables, with target phoneme initial in frames 1 - 10, final in frames 11 - 20, medial in frames 21 - 30, and random in frames 31 - 50.

Tape II-2: In nonsense syllables and in monosyllabic words, with one-half of the items being new and nonsense forms. Within the program, sequences were ordered so as to produce approximations such as / ðæ / followed by / ðæt /.

Tape II-3: In nonsense syllables and monosyllabic and bisyllabic words, with the Denes frequency controlling the introduction of all phonemes as long as the target phoneme distribution in initial-medial-final was adequate.

Tape II-4: In monosyllabic and polysyllabic words and in phrases. Phrases were restricted to include only the most frequently used words containing the target phoneme. At this point, the controlled presentation of the target phoneme was producing sequences such as /sno/ followed by /snomæn / followed by /ðə snomæn /.

Tapes II-5 and II-6: In monosyllabic and polysyllabic words patterned into simple phrases and sentences. New words were introduced sequentially in these tapes, and called for the handling of minimal pairs and predictable substitutions such as /ʃop / for /tʃop/.

Tape II-7: In phrases and sentences, with all presentations being sense words and containing as many new combinations of words as possible. The frame time for all Phase II tapes was 6 seconds.

The recording of master tapes was done in an IAC soundproofed room on a Crown SS844 4-track recorder. No inter-action had been observed in the ASCP study as far as the sex of the recorded voice was concerned, so the majority of the ASCS tapes were recorded using a female voice. The voice signal on the tapes was 60 db above system noise and at least 20 db above ambient noise when presented on the teaching machines.

Sequencing of button responses of Phase I tapes was done in an essentially random order. There was an arbitrary decision that the same button could not be pressed more than five times successively, and with that one restriction a master sequence was designed for each program sequence.

The complete text of the Automated Stimulus Control System programmed instruction is given in Appendix C.

D. Teaching Machines

The design criteria for the ASCS machine emerged from the field experiences with the ASCP machines. It was decided that the ASCS machine would present the Phase I discrimination materials in the correction mode, and the Phase II self-correction materials in the non-rewind mode. The data had shown that latency variability was quite high, and that it was impractical for the machine to operate in such a manner that the subject could only respond within the time of the presentation of each frame. The data also indicated the need to significantly shorten the frame time by at least half. These decisions made it necessary to design the ASCS control unit so that the subject could respond at any time regardless of the direction of tape travel. The electronic definition of a response remained the same in the new design and the subject was allowed to make one response per frame or auditory stimulus. The ASCS machine incorporated a mechanical lock-out device that prevented the subject from pushing more than one button at a time. Push button reliability was improved to almost 100% with the addition of a flip-flop 'state detection' circuit which drove a monostable multivibrator and generated a five microsecond response pulse. This insured that only one pulse was generated when a response button was pushed, and that the button had to be released before another response could be made. The duration of the response pulse was important since it is impossible to perform electronically exclusive operations at the same time, i.e. command the tape recorder to go two directions at once. By making the response pulse duration five microseconds, the probability of skipping a two second frame was decreased to 1 in 400,000.

The use of the saw-tooth "raspberry" tone to signal an incorrect response was eliminated since some of the subjects had initially equated the pure tone and the saw-tooth tone. The pure tone or pure tone and M&M were available as reinforcers, but incorrect responses were followed only by silence on the ASCS machines.

The reliability criterion for the ASCS machines was 2,500 serial frames without a machine failure. All ASCS machines met this criterion before being placed in use. Once in the field, it was found that the tape recorder direction change relay presented a maintenance problem in all machines; only one machine had an actual failure caused by this relay. A solid state circuit modification was designed and incorporated in all of the machines, which eliminated the relay and increased reliability to near 100%. No further machine failures were noted in over four months of operation.

Three of the ASCS machines, the two at Dixon and the one at the Atlanta Speech School, were equipped with M&M chocolate candy dispensers and associated logic circuitry. The logic circuitry allowed the operator to select the probability of primary positive reinforcement on a random variable ratio with settings of 0%, 20%, 40%, 50%, 60%, 80%, and 100% (109). The circuitry and mechanical operation of the dispensers was extremely reliable in these machines at ambient temperatures below eighty degrees.

Since subjects with reduced acuity were to participate in the study at the Atlanta Speech School, Inc., the ASCS machine there was equipped with an audio system which would provide 120 db SPL complex noise.

The ASCS machine which was sent to the Atlanta Veterans Hospital was equipped with a Sawyers Rotomatic slide projector and back projection screen. The projector control logic presented the subject with a new slide each time a new frame code was introduced into the counter. This system was highly reliable and the only failure was caused by a bent slide mount which jammed the slide change mechanism.

The average number of frames presented on each ASCS machine by location were:

Dixon State School	14,400
Atlanta Speech School, Inc.	15,000
Atlanta Veterans Administration	6,000
Las Cruces Schools	8,000

Details and schematics for the ASCS machines are given in Appendix E.

E. Studies

Relying upon the findings from the Automated Speech Correction Program study, the decision was made to employ only the correction presentation for Phase I treatment and the non-rewind presentation for Phase II treatment during the Automated Stimulus Control System studies. In order to provide for comparative data, the Templin Short Test of Sound Discrimination (145), the Templin-Darley Screening Test of Articulation (146), and the Peabody Picture Vocabulary Test (25) were administered to the experimental subjects in all settings. The Illinois Test of Psycholinguistic Abilities (86) and the depth discrimination and articulation tests were to be included as measures at the discrimination of the various co-directors.

The co-directors of the studies to be carried out at Dixon, Illinois, and Atlanta, Georgia, were informed of earlier findings in experimentation with programmed instruction which were expected to influence the outcome of the studies. It had been shown that individuals falling below the "normal" intelligence range tended to respond differently to a given sequence of programmed instruction than those who had been classified as having normal or above-normal I.Q.s (49, 62, 130, 142). It was also understood that programmed instruction had been found to be especially effective with the mentally retarded (93, 143), and that it was viewed as a most promising method for language rehabilitation with the aphasic (15, 57, 144, 149).

No control group was used in any of the studies, both because of the nature of the settings and because of the accepted fact that evaluation of programmed instruction does not necessarily call for a comparison between an experimental and a control group (84, 142).

The studies at Dixon and Atlanta were viewed as pilot studies with new populations; the one in the Las Cruces Schools was to be clinical in nature.

It was further agreed that portions of the general design used by Garrett in the ASCP study would be replicated when possible. Freedom to change design was available if a change was indicated in the opinion of the co-director at any of the cooperating sites.

An objective in all of the settings away from Las Cruces, New Mexico, was a relatively long-term clinical evaluation of the ASCS system following the initial experimental study. The inability of electronic parts distributors to provide components needed in the fabrication of the ASCS teaching machines resulted in an unprojected time delay of over seven months. This delay, in turn, automatically meant that the long-term clinical evaluation could not be carried out. Nonetheless, the primary objective of testing the ASCS system on different populations was achieved in all cases.

It had been proposed that data reduction for the studies at Dixon and Atlanta be conducted in real time by utilizing Wide Area Telephone Service between those settings and Las Cruces, New Mexico. Unfortunately, at the time the ASCS Machines were to be installed, it was learned that the telephone company had provided an incorrect quotation of fee for the WATS line, and that the increase from $500 to $5,000 per month could not be absorbed within the operating budget of the studies.

As an alternative, each of the ASCS Machines was equipped with an auxiliary low-cost tape recorder, and separate recordings were made for each session of each subject. The data tapes were then mailed to New Mexico State University where the data reduction was accomplished.

Cancellation of the WATS system of data reduction meant the loss of a number of safeguards which had been built into the studies. Rather than an automatic check by an electrical engineer of the ASCS Machine each time it came on the line, checking had to be left to the discretion of speech and hearing personnel who were not familiar with electronic procedures. Too, an unavoidable lag in data reduction ensued, and operational problems which could have been solved immediately went undetected for weeks.

On the other hand, a benefit resulted in that the personnel in the various settings were left entirely on their own in handling the ASC System. All data from the studies thereby were freed of the possibility of contamination from any bias which might have been introduced by the research staff at New Mexico State University, and the ASCS Machines were subjected to a more rigorous field-test than had been anticipated.

1. Dixon State School

a. Objective

The major objective in this setting was a study of the application and evaluation of programmed instruction for the correction of functional misarticulation problems of children who were mentally retarded, with the application being made through the Automated Stimulus Control System.

b. General Design

It was originally proposed that the study at Dixon State School replicate Garrett's acquisition phase except for the type and number of subjects used, the elimination of the control group, and the elimination of the non-rewind treatment in Phase II. When the M&M reinforcement dispenser became available, Rittmanic and Metzger felt that more productive information would be available from an investigation of the effect of the pure tone as the reinforcer as compared to the pure tone and M&M as the reinforcer. The design in Table 12 was followed.

TABLE 12
GENERAL DESIGN
ASCS -- DIXON STATE SCHOOL

TREATMENT	METHOD OF PRESENTATION
Automated Stimulus Control Programmed Instruction	ASCS Machine with Pure Tone
	ASCS Machine with Pure Tone and M&M
Traditional	Clinician

Selected references for this study included Johnson and Blake (71), McCarthy (85), Metzger (98), Rittmanic (120), and Schiefelbusch (127).

c. Population and Sample

A comprehensive survey had been made at the Dixon State School in order to identify those residents who had communication disorders. A random selection of educable mentally retarded patients with functional misarticulation problems was made. The experimental subjects were chosen with the qualifications that they must:

(1) Be in normal physical condition without severe emotional maladjustment as evidenced by the resident's psychological and medical record.

(2) Rank in the 50-70 I.Q. range as determined by the score from the Peabody Picture Vocabulary Test.

(3) Respond to the frequencies 250-4000 Hz at 15 db re USPHS as determined in an individual audiometric suite-type hearing test.

(4) Possess normal structural relationships of the articulatory organs and essentially normal movement.

(5) Show misarticulation of at least two General American phonemes.

(6) Be at least 8 years of age but under 12 years of age at beginning of treatment.

A total of 32 subjects were selected and ranked. A total of 12 were assigned to each of the ASCS treatments, and 8 were assigned to the traditional therapy treatment.

d. Results

TABLE 13
ANALYSIS OF CHANGE IN AUDITORY DISCRIMINATION FOLLOWING PHASE I AND PHASE II TREATMENT ASCS -- DIXON STATE SCHOOL

MEASURE	TREATMENT	MEAN DIFF.	S. E. DIFF.	t	P
Templin Discrimination	M&M and Tone Reinforced	3.08	2.45	0.96	NS
	Tone Only Reinforced	4.17	1.86	2.36	<.05
	Traditional Therapy	6.38	2.37	2.69	<.05

TABLE 14
ANALYSIS OF CHANGE IN ARTICULATION FOLLOWING PHASE I AND PHASE II TREATMENT ASCS -- DIXON STATE SCHOOL

MEASURE	TREATMENT	MEAN DIFF.	S. E. DIFF.	t	P
Templin-Darley Articulation	M&M and Tone Reinforced	5.08	3.63	1.46	NS
	Tone Only Reinforced	4.98	2.07	2.50	<.05
	Traditional Therapy	10.05	4.78	2.10	NS

The ASC System produced significant changes in the auditory discrimination and articulation of educable mentally retarded subjects when their responses on the ASCS Machine were confirmed with a pure tone reinforcer. Significant changes were not produced with the pure tone plus M&M reinforcer. The subjects receiving the pure tone plus M&M treatment showed a higher variability in errors and latency than those receiving only the pure tone treatment. This finding confirmed the clinical reports from Dixon that the M&M dispenser was distracting to the subjects, and that their attention tended to remain with the dispenser rather than the programmed instruction.

Subjects in the earlier ASCP study had shown a significant change in auditory discrimination following Phase I treatment, but after Phase II treatment no significant change remained. The positive finding in auditory discrimination at Dixon after Phase II was probably a result of better programming.

TABLE 15
TREATMENT TIME IN MINUTES
ASCS -- DIXON STATE SCHOOL

TREATMENT	RANGE PHASE I	MEAN PHASE I	PHASE II	MEAN TOTAL
ASCS Tone Reinforced	140 - 521	253	53	306
ASCS M&M Reinforced	159 - 346	228	53	281
Traditional Therapy	N/A	N/A	N/A	356

The mean time required for the ASCS treatments was entirely acceptable and compared favorably with the time required by normal subjects on the earlier ASCP treatments (Table 10).

Data from Tables 13, 14, and 15 indicated that the ASCS treatment was more effective than traditional therapy in producing changes in articulation in educable mental retardates. The data also indicated that the majority of time in the traditional therapy treatment was devoted to activities which influenced auditory discrimination more than articulation.

TABLE 16
PERCENT ERROR ON PHASE I
ASCS -- DIXON STATE SCHOOL

TAPE	MEAN	RANGE
I-1	45.2	26.6 - 55.5
I-2	66.4	61.1 - 75.5
I-3	64.2	60.0 - 71.1
I-4	65.1	57.7 - 74.4
I-5	70.0	54.4 - 77.7
I-6	64.6	33.3 - 80.0
I-7	68.2	55.5 - 75.5

Error rate on Phase I was high. Notes from the Daily Report Sheets which accompanied the data tapes for each subject, and impressions gathered during the reduction of the data tapes indicated that the major sources of the error rate lay with (1) the number of frames per tape, (2) the brevity of the instructions, and (3) a too rapid presentation of difficult items. The high error rate was not unexpected, and agreed with earlier findings in experimentation with programmed instruction (49, 62, 130, 142).

[Further discussion is given in Section IV: Conclusions and Recommendations.]

2. Atlanta Speech School, Incorporated

a. Objective

The major objective in this setting was a study to determine whether children with aphasia (language disorders) would profit from automated instruction with respect to articulatory skill, and rate and accuracy of response to auditory discrimination training. This was to be done by repeating portions of the acquisition phase of Garrett's ASCP study, but using aphasic children rather than normal children as subjects.

b. General Design

The delay in delivery of the ASCS Machine because of inability to secure components was one factor in the decision to not attempt a replication of Garrett's ASCP study at the Atlanta Speech School, Inc.. The other factor was the impossibility of a full replication because of the on-going speech and language training being received by the students at the Atlanta Speech School at the time the ASCS study was to begin. McCroskey proposed and followed the design given in Table 17.

TABLE 17
GENERAL DESIGN
ASCS -- ATLANTA SPEECH SCHOOL, INC.

ASCS With Pure Tone and M&M	
Group I	Group II
Subjects with Normal Acuity	Subjects with Questionable Acuity

Selected references for this study included Agranowitz (3), Bangs (11), Myklebust (104), McGinnis (88), and Wepman (158).

c. Population and Sample

The total number of children available was 46; classes were approximately equal in respect to sex; and the children ranged in age from 4 years to 14 years. In 22 of the children it was clear that auditory acuity was normal or near normal, and that this was not a factor mitigating against successful use of audio tapes. In the remaining children the auditory acuity was less clearly defined, and there was a possibility of moderate reduction in acuity. It was noted that subjective evaluations of hearing and some free-field tests with stimuli other than pure tones suggested that true acuity of the latter group might be better than the obtained thresholds.

Accurate assessment of intelligence is frequently difficult with linguistically handicapped individuals, but it was felt that this population could be considered to be of normal intelligence. The I.Q. range was from 81 to 131 as measured by standard performance type tests (WISC, Grace Arthur, Ontario School Abilities, MPS, and Goodenough), with a mean of 102 and a median of 101.

Ten subjects were assigned to Group I, Normal Acuity, and ten were assigned to Group II, Questionable Acuity.

d. Results

The following statement was prepared by McCroskey prior to the initiation of the study at the Atlanta Speech School, Inc.:

"Children who have been diagnosed as having aphasia are those who have failed to acquire verbal skills appropriately, in spite of demonstrated normal intelligence, adequate hearing and satisfactory motor abilities. These children experience a marked decrement in their comprehension of known words under conditions of competing messages or background noise. An unpublished M.Ed. research project by Julia Williams at Emory University (161) revealed that verbal comprehension was seriously reduced even under conditions which would be considered favorable for the normal listener, i.e., plus 15 signal-to-noise ratio (using both white noise and human babble). As the signal-to-noise ratio approached zero the aphasic children had great difficulty comprehending the familiar words (they achieved 100% accuracy in quiet); at the same time, normal children continued to achieve high comprehension scores even under minus 10 S/N conditions. It would appear that a system of instruction which presented speech in a non-competitive sound environment would be most desirable. Facility with handling competing messages could be built into the program at a later date but the initial signals should be distraction-free."

"It has also been shown that the aphasic child has an auditory fusion point which is normal; however, he requires 10 times as long as the normal child to make decisions about the order of acoustic events (normals required 36.13 msec. and the aphasic children required 356.88 msec.). These data appear in an unpublished M.Ed. research project by Audrey Lowe at Emory University (83)."

"It is reasonable to predict that aphasic children may learn appropriate speech and linguistic elements and patterns in a situation where the signal is clearly differentiated from environmental noise, is presented in a simple manner, is moved in small steps to greater complexity and is presented slowly as well as often enough for a correct response to be learned."

The following statement comes from a report submitted by McCroskey following the close of the study at the Atlanta Speech School, Inc.:

"In general, it may be said that the children related to the procedure well. In fact, all of the children were able to sit at the machine and maintain reasonably good attention--as far as we could tell--throughout any given tape."

"The following measures were obtained on children in the language school who had no hearing loss or were hard of hearing: A pure tone average for 3 frequencies, SRT, PBK, Templin-Darley Articulation and Templin Discrimination scores, PPVT, and ITPA. In discussing the results, Group I is the group of language disordered children with normal auditory acuity, and Group II is the group of language disordered children who had sustained some hearing loss. The 3-frequency, pure tone average for Group I was 2.5 dB (range 0-10 dB). The average hearing level for Group II was 58 dB (range 35-85 dB). With regard to mean speech reception threshold, Group I was at zero and Group II at 51 dB."

"Prior to 1967 there were never any auditory discrimination scores on the children in the language classes which were obtained by standardized methods. At the conclusion of the 1966-67 school year both speech reception thresholds and auditory discrimination scores utilizing the PBK lists were obtained on all but two children--one in each of the groups. For Group I, the pre-test scores on the Templin Discrimination task yielded a mean correct score of 49%; the post-test scores yielded a 73.8% correct value for an increase of 24.8%. It is interesting to note that Group I achieved an average discrimination score on PBK's of 83%. For Group II the pre-test Templin Discrimination score yielded a 35% value as compared with the post-test score of 54.3% for a positive difference of 19.3%. It is also interesting to note that the discrimination score obtained with the PBK lists was 67.8% (mean value)."

"With respect to the Templin-Darley Articulation Test--Group I yielded a mean of 54.5% correct at the outset and on post-test yielded a mean of 75% correct. For Group II the mean pre-test score was 61.2% correct and the mean post-test value was 72.4% correct. The groups showed increases of 21.5% and 11.2% respectively."

"There was a real-time lapse of seven months from pre-test to post-test. It is interesting to note that the PPVT at the outset yielded a mean age of 8 years 1 month for Group I, and at post-test yielded a mean age of 8 years 8 months for a seven month gain in mental age during the seven months of real time. For Group II, it was noted that they were initially 5 years and 1 month behind the mean chronological age of 10 years 4 months; at the close of the experimental period the average mental age was 4 years 5 months behind the chronological age yielding an improvement of eight months during the seven months of real time."

"For Group I, the pre-test results of the Illinois Test of Psycholinguistic Ability showed a language age of 6 years 7 months; the post-test language age was 6 years 8 months for a gain of 1 month during the real time lapse of 7 months. In comparing mean chronological age with mean language age, it was noted that Group I was initially behind its chronological age of 10 years 7 months by 4 years; at the close of the experimental period, they were 3 years 11 months behind chronological age. With regard to the language age of Group II, it may be noted that there was a gain of 2 months, as measured by the ITPA, during the seven months. The children moved from being 4 years behind in language age to being 3 years 8 months behind."

"Of the group on whom post-testing was completed, it was determined that 50% had corrected the phoneme on which they had worked after an average of 8 hours time on the tape. The others were only inconsistently producing the phoneme correctly. It must be noted that these percentages can be a little misleading in as much as only four children from Group I actually received post-testing in the spring of 1967. For Group II, five received post-testing. Of the five, four were judged to have corrected the target phoneme. Individuals in Group II spent an average of 9.3 hours on the tapes."

[Note: The times reported by McCroskey do not agree with the times reported on the Daily Report Sheets nor the running times of the data tapes.]

Of the 20 subjects in the study, 19 completed the full ASCS treatment. Of the 19, test results were received by New Mexico State University on only 9 subjects -- 4 in the normal acuity group and 5 in the questionable acuity group. To gain greater power in statistical analysis, and since all subjects had received the same treatment, the available data was lumped for the analysis done at New Mexico State University.

TABLE 18
ANALYSIS OF CHANGE IN AUDITORY DISCRIMINATION
FOLLOWING PHASE I AND PHASE II TREATMENT
ASCS -- ATLANTA SPEECH SCHOOL, INC.

MEASURE	TREATMENT	MEAN DIFF.	S. E. DIFF.	t	P
Templin Discrimination	M&M and Tone Reinforcer	2.78	2.64	1.05	NS

The non-significant finding for change in auditory discrimination following Phase I and Phase II ASCS treatment agreed with the results obtained on the normal elementary school subjects in the ASCP study.

Since the primary objective of the study at the Atlanta Speech School, Inc., was to investigate change in articulation, no provision was made to test discrimination change following Phase I treatment. It can only be assumed that a positive change occurred, for McCroskey had been able to find excellent results using the PBK lists.

TABLE 19
ANALYSIS OF CHANGE IN ARTICULATION
FOLLOWING PHASE I AND PHASE II TREATMENT
ASCS -- ATLANTA SPEECH SCHOOL, INC.

MEASURE	TREATMENT	MEAN DIFF.	S. E. DIFF.	t	P
Templin-Darley Articulation	M&M and Tone Reinforced	7.89	2.00	3.95	$<.01$

The ASCS treatment produced a significant change in articulation for the language handicapped children at the Atlanta Speech School, Inc..

TABLE 20
TREATMENT TIME IN MINUTES
ASCS -- ATLANTA SPEECH SCHOOL, INC.

TREATMENT	RANGE PHASE I	MEAN PHASE I	PHASE II	MEAN TOTAL
ASCS M&M Reinforced	231 - 292	262	53	315

An important finding from the analysis of times required to complete the Phase I ASCS treatment was that the children with aphasia exhibited a far more restricted range than did the educable mental retardates at Dixon State School -- 231 - 292 minutes as opposed to 140 - 532 minutes. The conclusion available was that the ASCS programmed instruction was handled more readily by the language handicapped subjects than by the retarded subjects. This conclusion was also supported by the lower mean error rate shown in Table 21.

TABLE 21
PERCENT ERROR ON PHASE I
ASCS -- ATLANTA SPEECH SCHOOL, INC.

TAPE	MEAN	RANGE
I-1	38.2	17.7 - 54.4
I-2	52.8	20.0 - 66.6
I-3	55.2	42.2 - 62.2
I-4	56.7	46.6 - 64.4
I-5	48.8	8.9 - 68.8
I-6	49.1	17.8 - 77.8
I-7	41.5	20.0 - 68.8

[Further discussion is given in Section IV: Conclusions and Recommendations.]

3. Atlanta Veterans Administration Speech Pathology and Audiology Services

a. Objectives

The first objective was an exploratory study to determine whether adults diagnosed variously as oral apractics, peripheral dysarthriacs, and aphasics would profit from automated instruction of the type offered by the ASC System.

The second objective was the development and evaluation of a visual presentation to accompany the present ASC System, or such revised program as might be developed.

b. General Design

The limited number of subjects available for the study prohibited any formal experimental design.

Selected references include Burr (15), Filby, *et al.* (37), Osgood (106), Rosenberg and Edwards (122), Schuell (128), and Wepman (159).

c. Population and Sample

The number of Veterans Administration out-patients who would be available for the study could not be specified. Nor could the specific disorder to be exhibited by each patient be specified. Past experience indicated that a group of ten to fifteen would be involved, that among these would be individuals exhibiting primarily apraxic conditions, those exhibiting primarily dysarthric conditions, and those exhibiting primarily aphasic conditions.

d. Results

Evaluation of study was to be clinical in nature, but was also to include an analysis of the present ASC System through error rate and frequency of response.

Prior to the study, the following paragraph was compiled from the communications of Keenan with Garrett:

> Dr. Keenan feels that the ASC System will be quite effective for aphasic patients who also have oral apraxia, that it may be effective for those exhibiting peripheral dysarthrias, and that it will have little effect upon the aphasic condition, *per se*, without some visual presentation being an integral part of the programmed instruction. The present system can best be presented visually through the use of

graphemes, building from syllables to words; but such materials may not build the needed association between symbol, referent, and concept. Or, in his words, "As long as only symbols are presented, we may teach parroting rather than language."

During the period of the study, Keenan reported three strong clinical impressions about the ASC System: (1) The adult aphasics could not follow the instructions on the Training Tape Leaders nor those embedded in the program proper; (2) The aphasics struggle "to make sense out of speech" operated against the sense-nonsense paired items; (3) The aphasic subjects tended to treat the allophones of the target phoneme as separate phonemes. Following the close of the study, Keenan strongly endorsed further experimentation with automated procedures for the speech and language rehabilitation of the aphasic.

Since the study at the Atlanta Veterans Administration were strictly of an exploratory nature, Keenan did not feel that the discrimination and articulation tests need be administered, and instead relied on clinical judgment. Clinically, no change in articulatory behavior was observed in the three adult aphasics who completed the Phase I ASCS treatment.

TABLE 22
TREATMENT TIME IN MINUTES
ASCS - ATLANTA VETERANS ADMINISTRATION

TREATMENT	RANGE PHASE I	MEAN PHASE I	PHASE II	MEAN TOTAL
ASCS Tone Only Reinforced	200 - 290	230	----	230

Both range and mean time to complete Phase I ASCS training were considered excellent. Taylor (144) and A. L. Holland (57) had both reported extended time requirements for adult aphasics to complete units of programmed instruction.

TABLE 23
PERCENT ERROR ON PHASE I
ASCS -- ATLANTA VETERANS ADMINISTRATION

TAPE	MEAN	RANGE
I-1	39.5	36.6 - 43.3
I-2	36.6	16.6 - 56.6
I-3	50.3	23.3 - 65.5
I-4	47.7	30.0 - 58.8
I-5	44.7	33.3 - 65.5
I-6	36.8	24.4 - 55.5
I-7	44.0	18.8 - 66.6

Error rate on the adult aphasics was also considered acceptable. Interestingly, the error rate of the child and adult aphasics was more alike than the error rate of the child aphasics and the mentally retarded children.

A very intensive analysis was carried out on the data tapes of one adult aphasic. Rigg found, during the initial reduction of the data tapes, that he was able to predict which response the subject would make on a given frame. He further found that the target phoneme was confused with all contrasting phonemes; that the subject's first correct discriminations were made with those phonemes which are acquired earliest by children; and that subsequent correct discriminations continued in the sequence found for phoneme acquisition by children. This observation definitely fits within Jakobson's contention (35, 36) that adults with aphasia lose speech and language skills in the reverse order to that which they had acquired them. Rigg also noted that change in the button-pushing task was strongly related to both an increase in error rate and an increase in latency, a finding confirmed during the formal data reduction activities. Attempts to analyze error rate, latency, and button task by mathematical procedures produced the finding that the responses were not random, but the pattern of responding could not be specified mathematically.

[Further discussion is given in Section IV: Conclusions and Recommendations.]

e. Linguistic Program

Rather than developing a visual program to accompany the ASCS programmed instruction, a linguistically based pilot program for the concept "over" was written and field tested on six aphasic adults at the Atlanta Veterans Administration and two deaf children at the Atlanta Speech School, Inc.. "Concept" was operationally defined after Gagne (41) as a response to things or events as a class. A verbal response was not needed by the subjects to show that they had command of the concept.

The program consisted of four sets of 100 frames each. The objective of the program was the generalization of a matching-to-sample response to the discrimination of one of three abstract geometric symbols to the verbal stimulus word "over." The investigations of Rosenberg and Edwards (122) showed that the matching-to-sample response was within the capabilities of the aphasic adult but that training in this task had little or no effect on language. The matching-to-sample response formed a pragmatic entry into the problem of figure discrimination, however, and as such it was decided that this response mode would be used. The intent was to program the four concepts of "over," "on," "under," and "by." Theoretically, it was felt that this would form a concept space within which the aphasic adult could then manipulate nouns and their relation to his environment. Further it was felt that these concepts could lead to the formation of sentence-like structures and make the programming of simple syntactical units easier.

The first set of frames in the program trained the aphasic in the matching-to-sample task. The objective of this set was to match-to-sample from an object set of four compact visual objects, circle, square, triangle and bar. Again following Rosenberg and Edwards, the program moved from open line figures to solid figures.

The second set of frames in the program always presented the stimulus figures in spatial relation to the bar; for example, the circle could be over, under, on, or by the bar. At frame thirty-three of this set, the verbal stimulus word "over" was paired with the visual stimulus of a circle over a bar. Through successive frames the visual object was faded until the subject was responding to the verbal stimulus only.

The third set of frames in the pilot program generalized the response of the verbal stimulus to include a more complex set of abstract visual objects.

The last set of frames in the program continued this response generalization to include line drawings of common objects such as a table, chair, etc., always maintaining the relation established by the circle, square, and triangle to the bar.

The six aphasic adults who served as subjects for the pilot test were diagnosed as follows: two very severe, one severe, one moderately severe, and two mild. One of the mild aphasics, however, was partially blind with cataracts in both eyes, and the extent of his literacy was undetermined. The two deaf children at the Atlanta Speech School, Inc., who were subjects in the testing, were considered to be of normal I.Q.. One was 8 years of age, and the other 6.

The program was presented to all subjects in the same manner. The subject was presented the sample box and required to touch the sample; the experimenter held a cardboard mask over the response boxes until this was done. The subject was then shown the response boxes and responded by touching the object which matched. Frames were presented at four second intervals, and when the subject made an error he was required to repeat the frame after a four second pause. When, in the course of the program, the sample had been replaced with the stimulus word "over," the response boxes were uncovered at the same time that the experimenter said the word "over." The program error criterion was 10% or less, and presentation was to stop when the subject made more than fifteen errors on serial frames.

The two deaf children made no errors in the program, leading the experimenter to believe that the concept was already in their repertories. Unfortunately, there were no naive subjects available at the time and further testing with the available deaf population was judged pointless.

All six aphasic adults met criterion on the first set which trained the task of matching-to-sample. Only three finished the program with less than 10% errors. These three subjects had been variously diagnosed as severe, moderately severe, and mild. The remaining three subjects finished only half of the total program.

An interesting sidelight is that the "over" program was also presented to three normal pre-school children, one aged 36 months, one 24 months, and one 19 months. All subjects completed the program successfully, and all had an error rate of only 10%. The conclusion available was that adult aphasics and young children do not operate with the same set of linguistic rules. At the same time, the pre-schoolers, the deaf children, and the aphasic adults all responded positively to the Contingency Management presentation used in this linguistically based program study. Discussions of Contingency Management include Homme (60, 61, 63, 65, 66), Addison (2), and Whelan (160). Premack's work had provided the original formulation (113, 114, 115).

Samples from the "Over" Program are given in Appendix D.

4. Las Cruces Schools

a. Objective

The objective in the Las Cruces Schools was a clinical evaluation of the effectiveness of the ASC System when the system was placed in a public school setting and administered solely by regular school personnel.

b. General Design

The clinical evaluation of the ASC System did not require an experimental design. However, in order to secure more information about the effectiveness of the programmed instruction, a design comparing the effectiveness of the presentation by the ASCS teaching machines to the presentation by a clinician was evolved as shown in Table 24.

TABLE 24
GENERAL DESIGN
ASCS -- LAS CRUCES SCHOOLS

TREATMENT	METHOD OF PRESENTATION
Automated Stimulus Control Programmed Instruction	ASCS Machine
	Clinician

The ASCS Machine treatment was presented in the correction mode for Phase I and non-rewind mode for Phase II, i.e., the same treatment as that at Dixon and Atlanta. The Clinician treatment was non-correction for both Phase I and II.

A Four-Station Response Device was prepared for use with the Clinician treatment. Four subject response boxes were available, each equipped with four push buttons and a "correct response" signal light. The clinician was provided with a master control box equipped with switches by which the correct response circuit could be completed. A schematic of the device is in Appendix E.

Groups of 2 to 4 subjects at a time received the Clinician treatment. The only difficulty Storr reported came early in the treatment when she tended to elongate the frame time because some of the subjects were hesitant in responding. Once she established a regular rate of presentation, the hesitant behavior disappeared.

c. Population and Sample

Three elementary schools in the Las Cruces system were designated by the school administration to provide the subjects for this study. Each of the schools had a pupil population of at least 450 children. Twenty children in each school were selected as subjects. All subjects exhibited functional misarticulations and were in the population that would normally receive speech therapy. Since the objective of this study was a clinical evaluation of the ASC System, a clinical evaluation by a qualified speech clinician was used to identify the subjects. All formal testing was conducted after that clinically-based selection.

One result of this method of selection appeared in the range of scores achieved by the subjects on the pre-test of the Peabody Picture Vocabulary Test. The I.Q. scores ranged from 33 to 133, with a mean of 85.

Without knowledge of any test results, Storr, the speech and hearing specialist for the Las Cruces Schools, randomly assigned ten children at each school to receive the ASCS Machine or the Clinician treatment. Storr also assumed the responsibility of presenting the programmed instruction for the Clinician treatment.

d. Results

TABLE 25
ANALYSIS OF CHANGE IN AUDITORY DISCRIMINATION
FOLLOWING PHASE I AND PHASE II TREATMENT
ASCS -- LAS CRUCES SCHOOLS

MEASURE	TREATMENT	MEAN DIFF.	S. E. DIFF.	t	P
Templin Discrimination	Machine Administered	-0.5	0.95	0.52	NS
	Clinician Administered	0.11	1.95	0.05	NS
Depth Discrimination	Machine Administered	0.96	0.47	2.06	<.05
	Clinician Administered	0.59	0.59	1.00	NS

Change in auditory discrimination following total ASCS treatment was essentially the same as that found following the total ASCP treatment.

TABLE 26
ANALYSIS OF CHANGE IN ARTICULATION
FOLLOWING PHASE I AND PHASE II TREATMENT
ASCS -- LAS CRUCES SCHOOLS

MEASURE	TREATMENT	MEAN DIFF.	S. E. DIFF.	t	P
Templin-Darley Articulation	Machine Administered	8.24	1.67	4.94	<.001
	Clinician Administered	8.31	1.95	4.19	<.001
Depth Articulation	Machine Administered	6.89	1.63	4.25	<.001
	Clinician Administered	8.44	1.35	6.28	<.001

Several important findings came from the analysis of change in articulation following the total ASCS treatment of the subjects in the Las Cruces Schools. The first finding was a re-confirmation of the finding from the ASCP study that no statistical difference existed between the correction and non-correction modes of presentation for auditory discrimination training. The second finding was the confirmation of the hypothesis that the ASCS programmed instruction could be presented as effectively by a clinician as by a teaching machine.

Because of the nature of this study, no record of time was kept for either treatment. It was nonetheless evident that far less time was needed for the Clinician treatment since the ASCS treatment included a correction Phase I presentation.

[Further discussion is given in Section IV: Conclusions and Recommendations.]

5. Latency Analysis

It had been hoped that an information theory analysis could be made of the data from the ASCS studies. It was particularly hoped that the data would provide information about the point(s) in the programmed instruction at which "chunking" occured (38). Analyses were carried out following Shannon (129) and Reza (119), but the only finding was that latency was directly related to the button-pushing task and error response.

The data on one adult aphasic was given a particularly thorough analysis, and his behavior can serve as an example of the general latency behavior of the other subjects. The aphasic subject exhibited an average latency of 1.45 seconds on frames 1-20 of Phase I-2 with the button-pushing task limited to a choice between button 1 and button 2. The instructional sequence then introduced button 3, and an increase of average latency to 1.92 seconds resulted. At frame 41, the introduction of button 4 and a full four-button task, the average latency rose to 2.26 seconds. In the case of this subject, the probability of error associated with the button-pushing task was 6% for 2 buttons, 18% for 3 buttons, and 24% for 4 buttons. The probability that latency and error rate correlated perfectly was significant with $P = .05$.

It was concluded that with a sequentially more difficult button-pushing task paralleled by a sequentially more difficult discrimination task, it was not possible to determine whether the more difficult discrimination, the more difficult button-pushing, or both, were producing the increase in latency. The amount of information being processed had obviously increased, whatever the source(s).

Average ASCS latencies are presented in Table 27.

TABLE 27

MEAN LATENCIES ASCS

TASK	DIXON STATE SCHOOL	ATLANTA SPEECH SCHOOL, INC.	ATLANTA VETERANS ADMINISTRATION
Two-Button	1.52	1.12 secs.	2.27 secs.
Three-Button	2.11	1.56 secs.	2.75 secs.
Four-Button	2.47	2.46 secs.	2.89 secs.

IV. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

1. An automated approach to speech and language therapy has been shown to be entirely feasible by the Automated Speech Correction Program and the Automated Stimulus Control System studies.

Functional misarticulation, the problem that occupies the great portion of time in school speech therapy programs, can now be approached with programmed instruction and/or teaching machines with the expectation that a significant change in articulation will be produced in a maximum number of children in a minimum of time.

The ASCS programmed instruction can be presented by clinician or teaching machine. If presented by clinician, a group approach can be used. If presented by machine, the supervision of a certified clinician is not required, and presentation can be made by non-professionals.

With normal elementary school children, the minimum expectation is that 75% will show a significant change regardless of the mode and method of presentation. An expectation of 95% showing a significant change is available with the Phase I correction mode and Phase II non-rewind mode on the ASCS Machine under clinician supervision. Regardless of the mode and method of presentation and the type of supervision, discrimination of a given phoneme can be had in approximately 25% of the time required to reach that goal using traditional ear training methods. Production of an acceptable but not necessarily stabilized phoneme can be had in approximately 20% of the time required under traditional methods.

Educable mentally retarded children and aphasic children also respond positively to the ASC System. It was demonstrated during the ASCS studies that with presentation being made by machine in the correction mode for Phase I and the non-rewind mode for Phase II, 75% of the children from these populations made significant improvement in their articulatory behavior. Although the relatively small number of subjects from these two populations precludes as strong a general statement as that made above for normal elementary school children, findings from other programmed instruction research have consistently indicated that testing with small populations produces evaluations of programmed instruction as valid as those gained from testing large populations. A corollary assumption is that alternate modes and methods of presentation of the ASCS materials would produce results comparable to those secured in the studies.

2. The articulatory changes produced by the ASCS system are assumed to need additional therapy for complete transfer to connected speech and for stabilization of the phoneme. Delay in delivery of components for the teaching machines produced a comparable delay in the initiation of both the ASCP and ASCS studies, and it was not

possible to carry out the proposed long-range studies which would have examined retention under different supportive treatments. Holland had found that the subjects who completed her productive auditory discrimination training program did show a significant degree of retention of articulatory change after one year while those in the other groups did not.

3. Other aspects of speech and language therapy are now amenable to automation. The technology for machine presentation is available in the ASCS Machine, and in the still more recently developed Automated Reading Monitor System (ARMS) Machine developed at New Mexico State University under contract with the Media Services and Captioned Films Branch, Division of Educational Services, Bureau of Education for the Handicapped, U.S. Office of Education. Rigg and Boehm report that the design of a non-correction, non-rewind teaching machine for either individual or group presentation, or the adaptation of some of the teaching machines available commercially, presents a relatively simple engineering problem.

4. One theoretical question which cannot be answered satisfactorily has to do with the percent of errors acceptable in programmed instruction of the type used in the ASC System. The analysis of errors on the programmed instruction presented by machine at Dixon and Atlanta showed a percentage far higher than the 10% usually advocated. At the same time, the statistical analyses of the pre- and post-tests showed significant changes in the articulatory behavior of the children who were subjects in the various studies. The resulting conflict is immediately apparent.

The ASCS programmed instruction was derived from materials developed for and tested on normal elementary school subjects, and it was expected that mentally retarded and brain injured subjects would show a higher error rate. Previous studies had consistently reported differing error rates when the same piece of programmed instruction was tested on different populations. Those studies had also shown differences in achievement with the different populations; but significant differences in achievement were not found between the various ASCS populations.

Major sources of error in the ASCS treatment were identified both by clinical observation and by analysis of errors and latency. For the mentally retarded, too many items were presented in each sequence and the more difficult were introduced too soon. For the aphasic children and adults, the sense-nonsense contrasts were particularly confusing. These are matters that can be remedied by a re-writing and re-testing of the programmed material.

Another major source of error arose from the button-pushing task. This difficulty had also been encountered during the ASCP study when a short 20-frame sequence of instructions had overcome the problem. In the ASCS materials, an attempt had been made to eliminate this problem by including two Button Training Tapes, which were completed before the ASCS tapes were presented, and by providing each ASCS tape with a Training Tape Leader which provided additional practice in button-pushing in conjunction with the introduction of the target phoneme. These training tapes did not overcome the problem, as attested to by the comments of the supervising clinicians on the Daily Report Sheets, the comments of many of the subjects themselves as heard on the data tapes ("OH! I should have pushed button 3."), and the analysis of errors and latency.

Since the objective of the ASCS study in the Las Cruces Schools was clinical, no provision was made for an error count of the subjects receiving the ASCS Machine treatment. The result was that data was not available for a comparison with either the earlier ASCP study or the Dixon and Atlanta ASCS studies.

The conflict between the programming philosophy of 10% errors and the productivity of the ASC System is important only on theoretical ground. Behaviorally, the results speak for themselves. Too, many individuals working with programmed instruction have expressed the opinion that error count has been over-emphasized, that an error rate of 25% is entirely acceptable with normal subjects, and that "lean" programming is preferable to "fat" programming.

5. Stimulus control in these studies was defined operationally as existing if the subjects receiving the ASCS Machine treatment attempted spontaneous vocalizations of their target phoneme. At Dixon State School, 72% of the subjects emitted spontaneous vocalizations; and at the Atlanta Speech School, Inc., 45.5% vocalized spontaneously. All of the subjects at the Atlanta Veterans Hospital vocalized spontaneously.

No attempt was made to keep a record of spontaneous vocalization in the Las Cruces Schools study, but the clinician reported that a majority of the subjects vocalized who were receiving treatment in groups from her.

6. It had been hoped that the ASCS studies might produce some statistical data applicable to the speech perception theory -- motor production theory of speech acquisition. Although such data could not be isolated, the behavior of the ASCS subjects paralleled that of the ASCP subjects during Phase I training. That behavior consisted of spontaneous vocalizations when such a behavior was called for to complete the response task, and indicated that the subjects were relying upon both perceptual and motor behavior. Garrett and Rigg were reinforced in their contention that the dichotomy between speech perception and motor production is more theoretical than operational.

B. Recommendations

1. The ASCS Programmed Instruction should be made available to speech and language clinicians through whatever avenues of dissemination are considered appropriate.

During the course of these studies, papers were presented at a variety of national, regional, and state professional meetings. Copies of the work scripts were also provided to every person who requested them. Manuscripts reporting on these studies will be submitted to the appropriate professional journals in the near future.

2. The directors of training programs in speech correction should be informed of the results of the ASCS studies. Hopefully, this will further influence the orientation of the training programs and result in the inclusion of more work in learning theory and behavioral modification procedures.

3. Additional programmed instruction should be developed. The programmed materials of Black, Garrett, Holland, and Taylor are representative of what can be achieved. A necessary condition for the production of such materials is the acceptance of an operant conditioning approach to therapy. Without this commitment and its requirement of operationally stated terminal behaviors, no objective evaluation of materials can be made.

4. Therapeutic procedures utilizing contingency management techniques need to be developed to provide larger units of material than those usually found in programmed instruction form.

Some exploratory studies have already been carried out in the Speech and Hearing Center at New Mexico State University. Positive results were obtained on children and adults exhibiting voice problems of both a functional and an organic origin and articulation problems of functional and organic origins, and on autistic children. Positive results were also obtained in the language retraining of several adult aphasics using commercially available programmed instruction presented under contingency management conditions.

5. A general systems analysis method applicable to all speech and language rehabilitation programs should be developed as soon as possible. Research based upon a systems analysis approach and/or producing information amenable to systems analysis should be given preference. The ASCS studies provide information of this type.

C. Miscellaneous Comments

1. Utilizing the finding from the ASCP study, an eight-station straight line, non-correction teaching machine was designed and built at New Mexico State University. The "Learning Laboratory" was first used to present the ASCP programmed instruction to foreign students

enrolled in English as a Second Language classes. The programs were later revised to incorporate confusable phonemes from the languages of the foreign students. Both versions produced some 80% correct responses and produced clinically acceptable improvement in the articulation and discrimination of General American phonemes.

A program written to teach recognition of IPA symbols to foreign students and to teacher education majors enrolled in Speech for the Classroom Teacher was presented in the "Learning Laboratory." The IPA program produced an average of 80% accuracy on a post-test for 80% of all students after 115 minutes of training.

2. The ASCS programs were used for auditory discrimination training with several junior high school students who were classified as severely retarded in reading. The students completed Phase I tapes for /ɪ /, /s/, and /r/. Their ability to use sound-symbol relationships in word attack markedly improved.

3. A variety of clinical investigations of the ASCP and ASCS at New Mexico State University produced the following findings:

a. The teaching machine with pure tone reinforcer can be used by normal 4 year olds under contingency management presentation.

b. The M&M dispenser is an efficient conditioning device for language handicapped and mentally retarded children. Several subjects from each category were kept at the teaching machine for over 40 minutes without a break.

An untestable 3-year-old with a marked speech and language delay was given an audiometric pure tone screening examination with the M&M dispenser providing 100% reinforcement. In 17 minutes it had been demonstrated that the child had adequate hearing for speech reception.

c. Children 9 years of age are capable of operating the ASC System without supervision of any type.

4. The Peabody Picture Vocabulary Test was administered pre- and post-ASCS treatment to subjects in the Atlanta Speech School, Inc., and in the Las Cruces Schools. Positive changes in mean M.A. and/or I.Q. scores were found in both settings following treatment. McCroskey's discussion of the change in the child aphasics was given earlier on page 47.

The subjects in the Las Cruces Schools had a mean I.Q. of 85 pre-test and 88.8 post-test. Analysis of variance on pre-test scores showed that the ASCS Machine treatment group and the ASCS Clinician treatment group were significantly different. Post-treatment scores of the machine treatment group showed a mean positive change of 5.14 on the PPVT, for a $\underline{t}$ of 3.79 and $P = < .001$. The clinician treatment group achieved a mean positive change of 2.26 for a $\underline{t}$ of 0.98, a non-significant change.

This information is included primarily for what use it may be to others. As this report was being prepared, a colleague noted that other investigators had recently reported an increase in I.Q. being found after subjects had worked with programmed instruction. It has not been possible to follow-up and offer specific comments at this time.

Several implications are available, however. Two of the schools providing subjects for the Las Cruces ASCS study are classified as serving children from "deprived" backgrounds. Too, a majority of children from these areas enter school with little or no knowledge of English. It would appear that children with these backgrounds particularly should receive as much programmed instruction as possible. It would also appear that the ASC System could be used well in Head Start programs.

5. It was evident throughout the ASCP and ASCS studies that a bias was introduced by the scoring of the articulation tests. In scoring severity of articulatory involvement, an omission traditionally carries 3 points, a substitution carries 2 points, and a distortion carries 1 point. Generally, this method of weighing was derived from the effect of the different types of articulation upon the intelligibility of an individual's speech. Analysis of articulatory change following ASCS treatment shows clearly that omission and addition of sounds were most easily changed, substitution of sounds was next easiest, and change of distortion of sounds was most difficult to achieve. Severe distortions tended to change to mild distortions, but distortions generally were resistant to positive modification.

Rigg and Garrett are investigating the utility of an operationally defined measuring instrument identified by the title "Properant." The measure calls for a simple clinical decision of the acceptableness or non-acceptableness of any speech act, and a ratio of acceptable to non-acceptable events provides a numerical rating in which 1.00 is perfect and .00 is lack of any acceptable production. Analysis of data from the Templin-Darley and the Properant is now being carried out and will be reported in an appropriate professional journal in the near future.

6. The three ASCS machines used in the Las Cruces Schools study were modifications of the machines used in the ASCP study. Two calls for service resulted in maintenance work; the other six calls for service were the result of operator error, i.e., the regular school personnel supervising the ASCS Machine treatment had not followed their check list.

The ASCS machines at Dixon and Atlanta were modified about half-way through the experimental period. The direction change relays in the tape recorders presented a maintenance problem and they were replaced with a solid state circuit. At the time this modification was being made, it was discovered that one machine had developed a malfunction in the electronic circuits which fired the pure tone reinforcer, and that both correct and incorrect responses were being reinforced. This was corrected.

The ARMS Machine referred to on page 59 is literally the fourth generation teaching machine developed at New Mexico State University. By the fall of 1967, electronic components were available and priced low enough to permit the incorporation of certain machine characteristics which were prohibited by cost when the ASCS Machines were built.

7. The data reduction system used in these studies was a modification of telemetry systems employed with missile research. Coding for the ASCP and ASCS studies used amplitude modulation with the result that "noise" introduced into the system from other sources caused the loss of some data. This loss was not significant since more than 100,000 responses were available from the ASCP study and some 65,000 were available from the ASCS studies.

8. The "Magical Number Seven, Plus One" is an appropriate place to conclude this report.

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APPENDIX A

SAMPLES OF COMPUTER-GENERATED CVC LISTS

LIHNG	THIHNG	HIHNG	-THIHNG	JIHNG	RIHNG	MIHNG	SIHNG
LEHN	WEHN	GEHN	THEHN	SEHN	HEHN	BEHN	DZEHN
HAHT	WAHT	JAHT	GAHT	BAHT	KAHT	HAHT	-THAHT
LAYZ	GAYZ	WAYZ	MAYZ	SAYZ	KAYZ	BAYZ	RAYZ
LAID	WAID	MAID	BAID	JAID	FAID	RAID	SAID
LU/M	WU/M	KU/M	SU/M	DZU/M	HU/M	BU/M	JU/M

SEHN	WEHN	GEHN	THEHN	HEHN	BEHN	DZEHN	PEHN
SIHNG	THIHNG	HIHNG	-THIHNG	JIHNG	RIHNG	LIHNG	MIHNG
SU/N	WU/N	KU/N	MU/N	DZU/N	HU/N	BU/N	JU/N
SERT	THERT	HERT	WERT	JERT	FERT	PERT	BERT
SUHZ	BUHZ	THUHZ	FUHZ	TUHZ	MUHZ	KUHZ	PUHZ
SAYT	GAYT	WAYT	MAYT	KAYT	LAYT	BAYT	RAYT

SHEEZ	WEEZ	BEEZ	MEEZ	SEEZ	HEEZ	PEEZ	REEZ
SHUHN	BUHN	THUHN	FUHN	TUHN	MUHN	KUHN	SUHN
SHAHT	WAHT	JAHT	GAHT	BAHT	KAHT	HAHT	-THAHT
SHURL	JURL	THURL	KURL	DZURL	PURL	-THURL	GURL
SHIHNG	THIHNG	HIHNG	-THIHNG	JIHNG	RIHNG	MIHNG	SIHNG
SHARS	HARS	KARS	PARS	FARS	MARS	BARS	GARS

COMPUTER--IPA ALPHABET

IPA	Computer	IPA	Computer
p	P	i	EE
t	T	ɪ	IH
k	K	e	AY
b	B	ɛ	EH
d	D	æ	AE
g	G	ɑ	AH
m	M	ɔ	AW
n	N	o	OH
ŋ	NG	ʊ	UH
f	F	u	OO
θ	-TH	ə	U/
s	S	ʌ	U,
ʃ	SH	ɚ	/R
tʃ	CH	ɝ	,R
v	V	ɪr	IR
ð	TH	ɛr	ER
z	Z	ɑr	AR
ʒ	ZH	ʊr	UR
dʒ	DZ	ɔr	AWR
h	H	aɪ	AI
l	L	ɔɪ	AWI
r	R	aʊ	AUH
w	W	ju	JOO
j	J		

APPENDIX B

ARTICULATION AND PHONETICS PROGRAM

Instructions

This manual is designed to introduce you to the sounds in General American speech, that particular dialect of English which is spoken by the majority of Americans. When you complete the manual, you will be able to associate each sound (or phoneme) with its appropriate symbol and be able to describe the typical way in which the phoneme is produced. In the majority of cases you will also be able to identify the sound when you hear it either in your speech or that of others.

Keep the following considerations in mind as you go through the manual:

1. Each sound in our speech is represented by one and only one symbol. The symbols are those currently used in the United States and are based upon the symbols in the International Phonetic Alphabet or IPA. For example, the phoneme [i] as in "beat" [bit] is always [i] alhtough English spelling may be the "ee" in "beet", the "ea" in "beat", the "e-e" in "mete", or the "e" in "be".

2. IPA symbols are always enclosed in brackets [ ] so that they will not be confused with the letters of the English alphabet. As an additional aid, each example spelled in English is placed within quotation marks:

"phone"	[fon]
English spelling	IPA

3. This manual is in the form of programmed instruction so that what you learn will be easily understood. The information is not presented in a form you are accustomed to, but you will find your progress rapid and your accuracy of response high.

Each bit of information is presented in a "frame". In each frame you will be asked to provide one or more answers. Immediately after you answer, you will check the correctness of your response by pulling the mask down to expose the answer in the column on the left margin of the page.

4. Write your answer in the blank which is provided. Be sure to say each stimulus word out loud, listening carefully to identify the phoneme for which it is an example.

5. This program has been tested and revised. Ideally you will be at least 90% accurate in your responses. When you do make an error, the probability is that the error is the fault of the program--not your fault. To help us improve the program, please place an X by the answer where the error occured, and leave your original response in the blank.

INTRODUCTORY CONCEPTS

sounds	[] When we speak, we make sounds in an organized sequence. Speech, then, is composed of a series of standardized ________ ordered in an acceptable sequence.
sounds	[] These speech ________ are a result of the breath stream being exhaled from the lungs.
breath	[] The air in our lungs which is expelled by the respiratory system forms the ________ stream which we use to make speech sounds.
breath stream	[] The respiratory system is the source of the air which forms the ________ ________ that we utilize to produce speech sounds.
larynx	[] The larynx is part of the respiratory system. The ________ is also called the voice box or "Adam's Apple."
speech	[] As the breath stream is exhaled and passes through the voice box or larynx, the vocal folds in the larynx vibrate the breath stream to produce ________ sounds.
voiced	[] This vibration of the breath stream by the vocal folds is called "voicing." A sound made with this vibration would be called a ________ sound.
folds	[] Voiced sounds are one type of speech sounds and are made when the breath stream is vibrated by the vocal ________ in the larynx.
voiced	[] The sound made when the vocal folds vibrate the breath stream is a ________ sound.
vocal	[] The vibrating breath stream is made when the ________ folds are brought together.
voiced	[] The phoneme [m] in "mat" -- [mæt] -- is a voiced sound. We can feel the vibration by touching the larynx. The vowel [æ] in [mæt] is also ________.

vibrated	[] when the vocal folds are not brought together, the breath stream is not __________ and the sound is unvoiced.
unvoiced	[] A sound which is not vibrated by the vocal folds is called an un__________ sound.
unvoiced	[] If the breath stream is not vibrated by the vocal folds as the exhaled air passes through the larynx, the sound produced is __________.
unvoiced	[] The phoneme [s] in "sat" -- [sæt] -- is an unvoiced sound. [m] is voiced but [s] is __________.
glottis	[] The space between the open vocal folds has a name of its own, the "glottis." The __________ is the space between the open vocal folds.
unvoiced	[] When the air passes through the glottis there is no vibration, and the sound is __________.
voiced unvoiced	[] The speech sounds produced by the larynx are either vibrated and __________, or they are not vibrated and are __________ sounds.
glottis	[] The space between the open vocal folds is called the __________.
voiced	[] Speech sounds are classified according to the modifications made to the breath stream. One modification is produced when the vocal folds are closed and a vibrated or __________ sound is made.
voiced	[] The [i] in "he" -- [hi] -- is __________.
unvoiced	[] Another modification is to not vibrate the breath stream but to produce an __________ speech sound.
unvoiced	[] The [h] in "he" -- [hi] -- is an __________ sound.
phonemes	[] Speech sounds are also referred to as "phonemes." There are 43 speech sounds or __________ in General American speech.
phonemes	[] Those of us who speak General American use only 43 __________ or speech sounds.

phoneme	[] In describing a speech sound or __________, we list the modifications that have been made to the breath stream by the articulatory mechanism.
voiced	[] We already know that the larynx can modify the breath stream. When the vocal folds are closed, the breath stream is vibrated and a ____________ sound is made.
[m] voiced	[] The first sound in "mat" is [___]. [m] is a ___________ phoneme.
unvoiced	[] When the vocal folds are open, the breath stream flows through the glottis without being vibrated and the sound is ___________.
[s] unvoiced	[] The first sound in "sat" is [___]. [s] is an ______________ phoneme.

THE ARTICULATORY MECHANISM

voiced unvoiced	[] The speech sounds produced by the larynx, both the ________ and ____________ sounds, are also modified by the articulatory mechanism.
lips	[] An anatomical terminology is used to describe the parts of the articulatory mechanism that modify the breath stream. Thus, the special name for the lips is "labia." If the two lips are used to modify the breath stream, we say that the sound is a bilabial or made with two ______.
bilabial	[] The sound [p] in "pot" -- [put] -- is called a bi__________ because it is made by closing the lips.
bilabial	[] The sounds made by using both lips are called ___labial sounds.
[f] labiodental	[] When only one lip is used to articulate a consonant, the anatomical term "labio" is used. The sound [f] in "fed" -- [fɛd] -- is made by touching the lower lip (labio) to the upper teeth. [__] is described as a __________dental sound.
labiodental	[] The anatomical term for our teeth is "dental" when we are describing a phoneme. The phoneme [f] is called a labio__________ because it is made with the lower lip touching the upper teeth.
larynx	[] Of the seven parts of the articulatory mechanism, three have been discussed. First the voice box or __________.
labia bilabial	[] Second, the lips or ________. If both lips are used to produce a speech sound, the proper term is bi___________.
dental	[] Third, when the teeth modify the breath stream, we use the term ___________ to indicate their use.
[p] - bilabial [f] - labiodental	[] The phoneme [p] is an example of a bi___________ sound. The phoneme [f] is an example of a __________dental sound.
linguadental	[] Some phonemes are made by touching the tongue to the upper teeth. The phoneme [θ] in the word "thin" -- [θɪn] -- is made in this way and is called a lingua____________.

linguadental	[] In describing the "th" sound in "thin", the [θ] is identified as a ________dental (meaning it was made with the tongue touching the upper teeth).
tongue	[] The anatomical term "lingua" refers to the ___________.
articulatory	[] The tongue is the fourth part of the ________________ mechanism. The articulatory mechanism modifies the breath stream to produce speech sounds.
modifies	[] Since the tongue is a part of the articulatory mechanism, tongue placement ____________the breath stream to produce speech sounds.
tongue and teeth	[] "Linguadental" indicates that the articulators used to produce the [θ] or unvoiced th sound in "thin" are the ____________ and ___________.
linguadental	[] The th sound in "thin" -- [θɪn] -- is made by forcing the breath stream out between the tongue tip and the cutting edge of the upper teeth. [θ] is called a ______________dental.
labiodental	[] The lower lip is placed against the cutting edge of the upper front teeth and the breath stream is forced between this point of contact. This sound is called a ____________.
labiodental	[] A phoneme made by emitting the breath stream between the lip and the teeth as in [f] is called _________________.
lingua-alveolar	[] The fifth part of the articulatory mechanism is the gum ridge behind the upper front teeth. The anatomical term is "alveolar." When the tongue touches the gum ridge, the phoneme is described as a lingua-_____________ sound.
tongue	[] The phoneme [t] in the word "top" -- [tɑp] -- is made by touching the ___________ tip to the alveolar ridge.
alveolar	[] The gum ridge behind the upper front teeth is called the ________________ ridge.
lingua-alveolar	[] The [d] in "do" -- [du] -- is also a lingua-__________.
lingua-alveolar	[] Speech sounds made by using the tongue and the alveolar ridge as the articulators are called ___________-___________ sounds.

palatal	[] The hard palate (roof of the mouth) is referred to as the "palate." A speech sound made using the palate is called a _________tal sound.
linguapalatal	[] Contact between the tongue and the sixth part of the articulatory mechanism, the palate, is described by the term __________palatal.
tongue palate	[] The speech sounds classified as linguapalatals are produced with the __________ touching the __________. The phoneme [ʃ] in the word "shoe" -- [ʃu] -- is a linguapalatal.
linguapalatal	[] Modification of the breath stream by contact between the tongue and palate classifies the sound as a _____________________.
v e lar	[] The seventh and last part of the articulatory mechanism is the soft palate or "velum." A sound produced with the velum is described as a _ _ lar sound.
tongue velum	[] "Linguavelar" is a term describing a speech sound made by emitting the breath stream between the _________ and the _____________or soft palate.
linguavelar	[] The phoneme [g] in the word "go" -- [go] -- is produced by the tongue and velum. [g] is classified as a ___________velar phoneme.

CONSONANT CLASSIFICATION

place	[] Phonemes are divided into two major types: vowels and consonants. Vowels are characterized by an open flow of the breath stream through the mouth. Consonants are characterized by some type of obstruction or restriction of the breath stream, and the place at which the obstruction or restriction takes place is termed the place of articulation. For this reason, consonantal descriptions always include a reference to the ________ of articulation.
articulation	[] Consonants are classified according to their place of ________________. This information designates the articulators being used.
tongue teeth	[] "Linguadental" is a term used to classify a consonantal sound. The place of articulation described is between the ____________tip and upper front ___________.
linguadental	[] [θ] in "thank" -- [θæŋk] -- is a ____________dental sound.
bilabial	[] If the place of articulation is between the lips as with the sound [p] in "pot" -- [pɑt] --, the phoneme is called a bi__________.
linguavelar	[] If the place of articulation is between the tongue and velum, as with [g] in "go" -- [go] -- the sound is a ________________.
place unvoiced	[] In describing consonantal articulation, the __________ of articulation is always named. The second description for consonants is whether they are voiced or ____________.
unvoiced are not	[] The phoneme [f] in "few" -- [fju] -- is an un________ labiodental. The vocal folds are/are not (choose one) vibrating as the sound is made. (To check on the presence of voicing in a sound, place your finger lightly on your larynx.)
unvoiced voiced	[] When two consonants are made in the same place and in the same manner excepting for the presence or absence of voicing, the two consonants are called "cognates." The [v] in "view" -- [vju] -- is the voiced cognate of [f]. Both are labiodentals, but [f] is _____________while [v] is ________________.

voiced	[] The th in "thin" is an unvoiced linguadental. The phonetic symbol for this sound is [θ] -- [θɪn]. The cognate of [θ] is [ð] and is described as a ________ linguadental, as in the word "then" -- [ðɛn].
voiced unvoiced place	[] Consonants are described by whether they are ________ or ____________, by their ___________ of articulation, and finally by the manner in which they are made.
breath	[] The manner in which a consonant is made is called the "manner of production" and describes a modification made to the breath stream or the movement of the articulators. A "stop" is a speech sound which involves a complete blocking of the __________stream at some point.
stop	[] A phoneme produced by blocking the breath stream completely is called a _______. [g] is a voiced linguavelar stop.
unvoiced stop	[] The cognate (remember that "cognate" refers to voicing) of the stop sound [g] is [k]. The description for [k] is _________, linguavelar, _________. [k] is the first sound in the word "keep" -- [kip].
bilabial [paɪ]	[] The sound [p] is also a stop. The breath stream is stopped by the lips and then released with a puff of air. [p] is an unvoiced, ___________ stop. [p] is the first sound in the word "pie" -- [__aɪ].
stop	[] If, after the breath stream is blocked, it is released with a friction noise, the sound is classified as an "affricative." "Affricative" simply means that a ________ is combined with a fricative breath release. The phoneme [tʃ] in the word "chum" -- [tʃʌm] -- is an affricative.
fricative	[] When the breath stream is not blocked but is constricted to produce a hissing noise, the phonemes made are classified as "fricatives." [f] is an unvoiced labiodental ______________.
labiodental	[] The fricative sounds of English are made by directing the breath stream against one of the articulators so that a friction or hissing noise is produced. In the sound [f], the lower lip is placed against the upper teeth so that the breath stream must cut across the lower teeth; this produces an unvoiced ______________ fricative.

voiced fricative	[] The cognate of [f] is [v]. [v] is a ____________, labiodental, ______________.
fricatives	[] Friction noises which occur in speech as a result of the breath stream being directed against an articulator are called ______________.
breath stream	[] Manner of production describes a modification of the ________ __________ or a movement of the articulators.
stop affricative fricative	[] If the breath stream is completely blocked and released with a puff, the manner of production is a ________. If the breath stream is blocked and then released with a friction noise, the manner of production is an ______________. If the breath stream is directed against an articulator to produce a friction sound, the manner of production is a ______________.
nasal	[] All of the phonemes in American English except three consonants are made by the breath stream being directed through the mouth or oral cavity. When the breath stream is directed through the nasal cavity, the manner of production has been changed and the sound is called a __________ sound.
nasal	[] All of the vowels, stops, affricatives and fricatives are made with the breath stream emitted through the oral cavity. Only the three nasal components are emitted through the _________ cavity.
nasal	[] The phoneme [m] in "mat" -- [mæt] -- is a sound made by directing the breath stream through the nasal cavity. [m] is a voiced, bilabial, _________.
voiced lingua-alveolar nasal	[] When the sound [n] as in the word "no" -- [no] -- is made, the tongue tip touches the alveolar ridge, the larynx is vibrating, and the breath stream is directed through the nasal cavity. [n] is a _____________, _________ - ______________, ______________.
glides	[] When manner of production is changed by the movement of an articulation, the term applied to consonants is "glide." Sounds produced by a movement of an articulator in contrast to those produced by relatively fixed articulators are classified as ___________.

glide	[] The phoneme [r] in the word "red" -- [rεd] -- is a glide. The place of articulation where the sound begins is lingua-palatal. The larynx is vibrating so the sound is voiced. Then the tongue moves forward and down as the jaw opens, and the manner of production is a ________.
glide	[] [w] as in "way" -- [we] -- and [hw] as in "whey" -- [hwe] -- are also classified as glides because they are produced by a movement of the articulators. The movement of the lips is the __________which produces these phonemes.
lateral	[] The term "lateral" refers to the breath stream being directed over the sides of the tongue rather than down a groove in the tongue. The one lateral phoneme in English is the [l] as in the word "look" -- [lʊk]. The [l] is a voiced, lingua-alveolar, ____________.
unvoiced voiced	[] To review the classification of consonants: first, indicate the presence or absence of voicing; second, indicate the place of articulation; third, indicate the manner of production. A sound may be voiced or __________. The [v] is _______________.
linguavelar bilabial	[] The place of articulation for consonants refers to the place where two articulators touch each other or cause the greatest constriction. [g] is a voiced, _____________, stop. [m] is a voiced, ____________, nasal.
stop fricative affricative	[] Consonants have different manners of production. [p] is an unvoiced, bilabial, _________. [f] is an unvoiced, labio-dental, _______________. The phoneme [tʃ] -- the "ch" in "chum" -- is made by first blocking the breath stream and then releasing it with a friction noise; the [tʃ] is an unvoiced, lingua-alveolar, __________________.
nasal glide	[] When the breath stream is directed through the nasal cavity, as in [m], the manner of production is __________. If the articulators move while the sound is being produced, the classification is _________as with the [r] in "red."
lateral	[] There are three nasals in English, but there is only one sound in which the breath stream is directed over the sides of the tongue; [l] is the __________ in English.
voiced	[] The three parts of a consonantal description are: Voicing Place of Articulation Manner of Production. [s] as in the word "sun" -- [sʌn] -- is described as an unvoiced, lingua-alveolar, fricative. Its cognate, [z] in the word "zoo" -- [zu] --, is a ___________ lingua-alveolar, fricative.

two/2	[] In the following sections, the consonants in General American speech have been grouped under place of articulation. The first section deals with the bilabials -- those consonants made with the ______ lips.
bilabial	[] The phoneme [p] as in "pen" -- [pεn] -- is an unvoiced ____________ stop.
[p ε n] stop	[] The consonant [p] as in [__εn] is an unvoiced bilabial ______.
[b ε n] bilabial	[] [b] in "ben" -- [__εn] -- is a voiced __________ stop.
[b ε n] voiced	[] The [b] in [__εn] is the ________ cognate of [p]. (Remember that cognate refers to vibration of the breath stream by the vocal folds.)
bilabial	[] The __________ stop consonants are [p] as in "cop" and [b] as in "cob".
nasal	[] When the breath stream is stopped by the articulators and cannot flow out through the mouth, it is emitted through the nose. Sounds made in this manner are called ________ sounds.
bilabial	[] [m] as in "some" -- [sʌm] -- is a voiced ________ nasal.
nasal	[] [p], [b] and [m] are all bilabials; but while [p] and [b] are stops, [m] is a ________.
voiced unvoiced, stop voiced, stop	[] [m] is a ________ bilabial nasal. [p] is an ________ bilabial ________. [b] is a ________ bilabial ________.
[m] voiced, bilabial nasal	[] The first sound in the word "may" is [__] and is ________ ________ ________.
[b] voiced, bilabial stop	[] The first sound in the word "bay" is [__] and is described as ________ ________ ________.
[p] unvoiced, bilabial stop	[] The first sound in the word "pay" is [__] and is described as ________ ________ ________.

bilabial	[] When a description refers to movement of the articulators, the term "glide" is used. [w] in the word "way" -- [we] -- is a glide. It is described as a voiced ____________ glide because the lips move during the production of the phoneme.
unvoiced glide	[] The [w] in "way" is voiced. [hw] as in "whey" -- [hwe] -- is its cognate and is described as an __________ bilabial __________.
unvoiced	[] [w] is voiced; [hw] is ______________.
[we] voiced glide	[] The phoneme [w] in the word "way" -- [__e] -- is a ___________ bilabial ____________.
[hwe] unvoiced glide	[] The phoneme [hw] in the word "whey" -- [___e] -- is an ___________ bilabial ____________.
[hw] unvoiced, bilabial glide	[] The first sound in "where" is [___] and is described as ___________ ______________ ___________.
[w] voiced, bilabial glide	[] The first sound in "we" is [___] and is described as __________ ______________ _________.
teeth	[] This section deals with those consonants which are articulated by the lip and teeth--the labiodentals. The place of articulation for the sound [f] in the word "food" -- [fud] -- is between the lower lip and the upper _______.
[fud] dental	[] The [f] in "food" -- [__ud] -- is an unvoiced labio__________ fricative.
voiced labio	[] [v] is the cognate of [f]. The [v] in "vein" -- [ven] -- is described as a ___________ ____________ dental fricative.
[εvri] dental fricative	[] The [v] in "every" -- [ε__ri] -- is a voiced labio_________ _______________.
[ɪf] labiodental	[] The [f] in "if" -- [ɪ__] -- is an unvoiced __________ fricative.
[f]	[] The unvoiced cognate of [v] is [___].

[f] unvoiced labiodental fricative	[] The first sound in "few" is [___]. It is described as ________ ____________ ____________.
[ɛvɚ] voiced labiodental fricative	[] The medial sound in "ever" is [________]. It is [ɛ__ɚ] described as __________ ____________ __________.
dental	[] This next section has two phonemes-- those produced by the tongue and teeth. "Lingua" refers to the tongue; "__________" refers to the teeth.
fricative	[] The unvoiced linguadental is [θ] as in "thin" -- [θɪn]. [θ] is an unvoiced linguadental __________.
[tiθ] linguadental	[] [θ] is the proper symbol to use for the sound in the word "teeth" -- [ti___]. This phoneme is an unvoiced ______________ fricative.
[θ] [ðæt]	[] [___] is the unvoiced linguadental fricative. Its cognate is [ð] as in "that" -- [___æt].
[ð]	[] [___] is the voiced cognate of [θ].
[θ] unvoiced linguadental fricative	[] The first sound in "thigh" is [___]. It is described as __________ ______________ ____________.
[ð] voiced linguadental fricative	[] The first sound in "this" is [___]. It is a ________ ______________ ______________.
alveolar	[] This section deals with the consonantal sounds which are produced when the tongue and alveolar ridge are the place of articulation. [t] in "ten" -- [tɛn] -- is an unvoiced lingua-______________ stop.
lingua	[] The voiced cognate of [t] is [d] as in "den" -- [dɛn]. [d] is a voiced __________-alveolar stop.
[dɛn] lingua-alveolar	[] The [d] in [___ɛn] is a voiced ________-__________ stop.

[tɛn] unvoiced, alveolar stop	[] The [t] in [___ɛn] is an __________lingua-__________ ________.
[d]	[] The voiced cognate of [t] is [___].
unvoiced lingua-alveolar stop	[] The phoneme [t] is described as __________ __________-__________ __________.
voiced lingua-alveolar stop	[] [d] is a __________ __________-__________ ________.
[t]	[] The last sound in "at" is [___].
[d]	[] The first sound in "do" is [___].
voiced	[] When the place of articulation is lingua-alveolar and the manner of production is nasal, the phoneme being made is [n] in the word "no" -- [no]. [n] is a __________ lingua-alveolar nasal.
nasal	[] [n] as in "no" is a voiced lingua-alveolar ________.
[n] voiced lingua-alveolar nasal	[] The first sound in "no" is [___], which is described as __________ ________-__________ __________.
[fʌn]	[] The proper symbol for the last sound in "fun" is [fʌ__].
[nʌn]	[] The proper symbol for the first and last found in "nun" is [___ ʌ___].
voiced	[] the [s] in "say" -- [se] -- is a lingua-alveolar. It is unvoiced and a fricative. Its cognate is [z] as in "zoo" -- [zu]. [z] is a __________lingua-alveolar fricative.
[bʌz] lingua-alveolar	[] [z] is the last sound in "buzz" -- [bʌ___]. [z] is a ________-__________fricative.
-alveolar fricative	[] [z] is a voiced lingua-__________ __________.

unvoiced lingua-	[] [s] in "say" is an ________ ________-alveolar fricative.
[lɛs] unvoiced lingua-alveolar fricative	[] [s] is the final phoneme in "less" -- [lɛ___]. [s] is described as ________ ________-________ ________.
[s]	[] The proper symbol for the last sound in "bus" is [___].
[z]	[] The proper symbol for the last sound in "sons" is [___]. (Don't let spelling fool you. Check the sound not the spelling.)
lingua	[] Affricative is the term used to describe a sound which begins in a stop position and ends with a friction sound. The two affricatives are [tʃ] as in "chew" -- [tʃu] -- and [dʒ] as in "Joe" -- [dʒo]. Both affricatives are ________-alveolars.
affricative -alveolar	[] [tʃ] as in "chew" is an ________. It is unvoiced and is a lingua-________.
lingua- affricative	[] [tʃ] is an unvoiced ________-alveolar ________.
lingua-alveolar affricative	[] The voiced cognate of [tʃ] is [dʒ] as in "Joe". [dʒ] is a voiced ________-________ ________.
[wɪtʃ] unvoiced -alveolar	[] The final phoneme in "witch" is [tʃ] -- [wɪ ___]. [tʃ] is an ________ lingua-________ affricative.
[ɛdʒ] lingua-alveolar affricative	[] The final phoneme in "edge" is [dʒ] -- [ɛ____]. [dʒ] is a voiced ________-________ ________.
[tʃ] -- [tʃɝtʃ]	[] The proper symbol for the first and last sound in "church" is [ ].
[dʒ] [dʒʌdʒ]	[] The proper symbol for the first and last sound in "judge" is [____].
lateral	[] [l], the one lateral sound, is a lingua-alveolar. [l] as in "lay" -- [le] -- is a voiced lingua-alveolar ________.

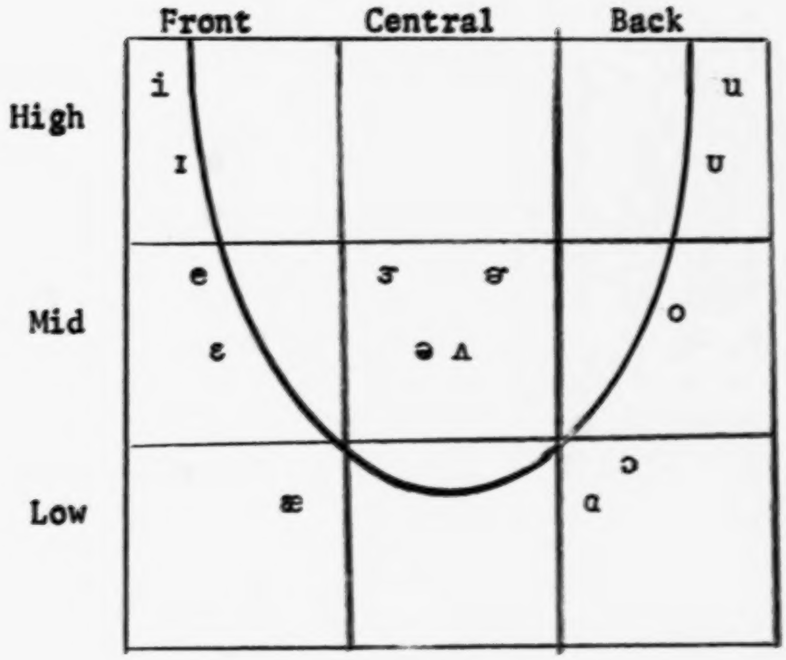
[l̲ek] lingua-alveolar lateral	[] The [l] in "lake" -- [__ek] -- is a voiced ________-________ ________.
[l]	[] The proper symbol for the sound at the end of the word "ball" is [___].
lingua	[] The next place of articulation occurs with the tongue and palate. The consonants in this group are called the ________palatal sounds.
palatal	[] The [ʃ] in "shoe" -- [ʃu] -- is an unvoiced lingua ________ fricative.
voiced	[] The fricative [ʃ] as in "shoe" is unvoiced. Its cognate [ʒ] as in the medial consonant of "vision" -- [vɪʒən] -- is ________.
linguapalatal	[] The voiced cognate of [ʃ] is [ʒ]. [ʒ] is a voiced ________fricative. [ʒ] is the medial consonant in "vision" -- [vɪʒən].
unvoiced fricative	[] [ʃ] in "ash" -- [æʃ] -- is an ________ linguapalatal ________.
[wɪʃ̲] linguapalatal	[] "Wish" ends with the unvoiced fricative [ʃ] -- [wɪ ___]. [ʃ] is a ________.
voiced linguapalatal	[] The phoneme [ʒ] in the word "azure" - [æʒɚ] -- is a ______ ________ fricative.
[ʃ̲o] [dɪʃ̲]	[] [ʃ] is the initial sound in the word "show" -- [____o], and the final sound in the word "dish" -- [dɪ ___].
[ʒ]	[] The voiced cognate of [ʃ] is [___].
[ʃ]	[] The proper symbol for the initial sound in "sheep" is [___].
[ʒ]	[] The proper symbol for the medial consonant in "lesion" is [___].

glide	[] The other two linguapalatal consonants are [r] in "red" -- [rɛd] -- and [ ] in "yet" -- [jɛt]. Both [r] and [j] are glides. The term __________ indicates that some movement of an articulator has taken place.
lingua palate	[] The glide [j] is a voiced __________palatal. The movement for [j] begins with the tongue in contact with the ______________.
palatal glide	[] [j] as in "yet" -- [jɛt] -- is a voiced lingua- ______________ ______________.
linguapalatal [jɛl]	[] The voiced ________________glide [j] is the initial sound in "yell" -- [___ɛl].
[j] -- [jɑt]	[] The proper symbol to use for the initial sound in "yacht" is [___].
voiced linguapalatal glide	[] The full description of [j] is ____________________ ____________________ ____________________.
glide(s)	[] The glide [r] is identified as a linguapalatal because the tongue starts its movement from a palatal contact. The [r] in "red" -- [rɛd] -- starts from a linguapalatal contact and then __________s to the next sound.
[rɛd] voiced palatal	[] [r] in "red" -- [___ɛd] -- is a __________ lingua ______________ glide.
[r]	[] The [r] in "rabbit" has the symbol [___].
linguapalatal [rʌʃ]	[] [r] is a voiced ____________________glide in "rush" -- [___ʌʃ].
[r] -- [kɑr]	[] In words like "par" and "tar", the final [r] is still a glide. In this case the linguapalatal contact ends the glide rather than beginning it. The proper symbol to use for the final sound in the word "car" is [___].
[r] -- [fɪr]	[] The proper symbol to use for the final sound of "fear" is [___].
[j] [r]	[] The symbol for the first phoneme in "you" is [___]. The symbol for the final phoneme in "poor" is [___].

lingua	[] This section deals with the phonemes that are articulated by the tongue and velum (soft palate). [k] is an unvoiced ________velar stop.
unvoiced velar	[] [k] is the initial sound in "cat" -- [kæt] -- and is described as an ___________ lingua_________ stop.
[bæk] lingua- stop	[] The [k] in "back" -- [bæ___] -- is an unvoiced ________-velar _________.
voiced stop	[] The [g] in "go" -- [go] -- is the cognate of [k], so the proper description of [g] is a ___________ linguavelar ____________.
[ge] linguavelar	[] The [g] in "gay" -- [___e] -- is a voiced _________ stop.
[æsk] unvoiced stop	[] The phoneme [k] in "ask" -- [æs___] -- is the ______________ linguavelar __________.
voiced [g]	[] The ___________cognate of [k] is [___].
[k] -- [bekɪŋ]	[] The proper symbol for the medial consonant in "baking" is [___].
[g] -- [lɛg]	[] The proper symbol for the final sound in "leg" is [___].
unvoiced voiced	[] [k] is the _________linguavelar stop. [g] is the ___________ linguavelar stop. There is also a voiced linguavelar nasal: the phoneme [ŋ] in "ring" -- [rɪŋ].
lingua	[] The word "tongue" -- [tʌŋ] -- ends with the voiced ___________velar nasal phoneme [ŋ].
[rɪŋ] voiced	[] The phoneme [ŋ] is the final sound in "ring" -- [rɪ ___]. [ŋ] is a ________ linguavelar nasal.
nasal [ŋ]	[] "Sing" also ends with the voiced linguavelar ________ [___].
[fɪŋgɚ]	[] The sound [ŋ] never begins a word in English, but it does appear medially as in "finger" -- [fɪ__gɚ].

[ŋ] -- [bæŋɪŋ]	[] The medial consonant and the final consonant in "banging" is [___].
glottal	[] The one glottal sound is [h] as in "how" -- [haʊ]. [h] is an unvoiced ______________ fricative.
[h] -- [hɔrs]	[] [h] appears medially as in "ahead" -- [əhɛd] -- but it does not appear at the end of a word. The proper symbol to use for the initial consonant in "horse" is [___].
[hɪr] unvoiced	[] [h] in "here" -- [___ɪr] -- is an ________________ glottal fricative.

VOWEL DIAGRAM



The diagram above is a traditional way of organizing the vowels in General American speech. In all work with vowels, an important point to keep in mind is that vowel descriptions are relative. Thus, although individuals will vary in the degree of jaw opening they use, each speaker always makes [i] slightly higher than [ɪ], [u] is always higher than [ʊ].

The vertical and horizontal lines have been added so that a "box" is available for each group of vowels which have common identifying terms. "Front", "central", and "back" refer to location in the mouth, with "front" near the teeth and "back" near the throat; "high", "mid", and "low" refer to the elevation of the tongue.

The descriptions and key words presented below are for your convenience as a reference; the following section of the manual will provide you with adequate experience for learning the descriptions.

[i]	in "beat"	--	[bit]	--	high-front tense
[ɪ]	in "bit"	--	[bɪt]	--	high-front lax
[e]	in "bait"	--	[bet]	--	mid-front tense
[ɛ]	in "bet"	--	[bɛt]	--	mid-front lax
[æ]	in "bat"	--	[bæt]	--	low-front lax
[ɑ]	in "hot"	--	[hɑt]	--	low-back lax
[ɔ]	in "bought"	--	[bɔt]	--	low-back tense rounded
[o]	in "boat"	--	[bot]	--	mid-back tense rounded
[ʊ]	in "book"	--	[bʊk]	--	high-back lax rounded
[u]	in "boot"	--	[but]	--	high-back tense rounded
[ɝ]	in "bird"	--	[bɝd]	--	mid-central tense "r"-colored
[ʌ]	in "but"	--	[bʌt]	--	mid-central lax
[ɚ]	in "butter"	--	[bʌtɚ]	--	mid-central lax "r"-colored
[ə]	in "above"	--	[əuʌv]	--	mid-central lax

vowel	[] Vowels are not described in the same way as consonants. Some consonants are voiced and some are unvoiced, but vowels are always voiced. Since the breath stream is always vibrated by the vocal folds when a ____________ is produced, the term voiced is not used.
voiced	[] Vowel sounds are always ____________, never unvoiced.
vowels	[] Vowels are always made with the breath stream flowing through the mouth without constriction or stopping by the articulators. This means that consonants have a "place of articulation" but that ______________ do not.
are not	[] Since the articulators do not modify the breath stream in vowel production, it follows that terms such as "fricative," "stop," and "nasal"--which describe the manner of production-- are/are not used. (Choose one)
manner voiced	[] The breath stream is never constricted nor stopped in vowel production so there is no description of the ________ of production. And, vowels are always __________ so there is no description of breath stream vibration.
	[] Vowels are described primarily by what the tongue is doing as a vowel sound is made. Five vowels are made in the front of the mouth: [i] in "beat" -- [bit] [ɪ] in "bit" -- [bɪt] [e] in "bait" -- [bet] [ɛ] in "bet" -- [bɛt] [æ] in "bat" -- [bæt]
low	[] The vowel [i] in the word "beat" is made with the tongue high in the front of the mouth. On the other hand, the vowel [æ] in the word "bat" is made with the tongue ______ in the front of the mouth.
high	[] The vowel [æ] in "bat" is made with the tongue low in the front of the mouth. The vowel [i] in "beat" is made with the tongue ________ in the front of the mouth.
[i] [æ]	[] The vowel in "beat" is [i] -- [æ]. (Choose one) The vowel in "bat" is [__].
front front	[] [i] is made high in the ________ of the mouth. [æ] is made low in the __________ of the mouth.

high front	[] [i] is a ________-front vowel. [æ] is a low-________ vowel.
tense lax	[] The vowel [ɪ] in the word "bit" is also a high-front vowel like [i] in "beat". The difference between the two is primarily one of muscular tension. [i] is a tense vowel because it has more tension than [ɪ] which is a lax vowel. The full description for [i] is high-front __________. The full description for [ɪ] is high-front __________.
[i] [ɪ]	[] Match the descriptions to the phonetic symbols: high-front tense ________ [i] high-front lax ________ [ɪ]
mid	[] The vowel [e] in "bait" is made with the tongue at a mid height in the front of the mouth. [i] is described as high-front tense; [e] is described as ______-front tense.
high mid	[] Both [i] in "beat" and [e] in "bait" are tense words. But [i] is _____-front tense while [e] is _____-front tense.
high high mid	[] [i] is a ______-front tense vowel. [ɪ] is a ______-front lax vowel. [e] is a _____-front tense vowel.
tense lax	[] [i] and [ɪ] may be thought of as a pair of vowels. Both are high-front, but [i] is __________ and [ɪ] is ________.
lax	[] [e] is a mid-front tense. The vowel [ɛ], as in the word "bet", is also mid-front, but it is not tense -- it is _______.
tense [ɛ]	[] [e] and [ɛ] may be thought of as a pair of vowels Both are mid-front, but [e] is _________ while [___] is lax.
mid-front tense	[] [e] and [ɛ] are both ______-front vowels. But [e] is ___________ while [ɛ] is ________.
front	[] [æ] in "bat" is also a lax vowel. [æ] is described as low-________ lax.

lax	[] [æ] is a low-front _____ vowel.
voiced	[] the terms "voiced" and "unvoiced" are not used in describing vowel production because vowels are always _____________.
	[] The movements of the jaw are not described in vowel production either, even though the jaw has a different degree of opening for each vowel. The jaw, beginning with the high front tense [i], is relatively closed and gradually opens wider for [ɪ], wider still for [e], wider still for [ɛ], and wider still for [æ]. The amount of opening varies from individual to individual; some use very little jaw movement; some use a marked jaw opening.
	[] The descending order of the front vowels on the vowel diagram is [i], [ɪ], [e], [ɛ], and [æ]. Remember that as the front vowels are said in sequence, the jaw descends or drops and opens wider.
[ɪ] [ɛ]	[] The complete description of [i]--high-front tense--does not refer to the degree of jaw opening. It is simply assumed that the jaw opens wider and wider in the sequence of [i] - [ɪ] - [e] - [ɛ] - [æ]. In the pair [i] - [ɪ], _____ is wider. In the pair [e] - [ɛ], _____ is wider.
	[] The jaw is at its lowest point for the vowel [ɑ] "hot". [ɑ] is a back vowel. There are five back vowels. The term "back" refers to the position of the tongue in the back of the mouth. The five back vowels are: [u] in "boot" -- [but] [ʊ] in "book" -- [bʊk] [o] in "boat" -- [bot] [ɔ] in "bought" -- [bɔt] [ɑ] in "hot" -- [hɑt]
back back	[] The production of [ɑ] has the tongue arched in the _______ of the mouth. [ɑ] is a low-_______lax vowel.
back	[] Of the five back vowels, [ɑ] is the only one which does not use some degree of lip-rounding. All of the other back vowels have lip-rounding. The vowel [ɔ] in "bought" is a low-__________tense rounded vowel.
low low	[] The [ɑ] in "hot" is a _______-back lax unrounded vowel. The [ɔ] in "bought" is a _______-back tense rounded vowel.

unrounded rounded	[] [ɑ] in "hot" is un__________. [ɔ] in "bought" is ______________.
[ɔ] [ɑ]	[] [ɑ] and [ɔ] may be thought of as the low-back vowels, [____] is rounded; [_____] is unrounded.
tense	[] The most open vowel in American English is [ɑ]. When the jaw is raised slightly and the lips are rounded, the vowel produced is [ɔ], the low-back__________rounded vowel.
back	[] When the jaw is closed a bit more than in [ɔ], the vowel [o] as in "boat" is produced. [o] is the mid-_______ tense rounded vowel.
rounded	[] [ɑ] and [ɔ] are the low-back vowels. [o] is the only mid-back vowel. [o] is described as mid-back, tense, ______________.
mid-back	[] [o] in "boat" is _____-________tense rounded.
[o]	[] The one mid-back vowel is [___].
[o] [ɔ] [ɑ]	[] Match the symbols and the key words: boat [ɔ] bought [o] hot [ɑ]
back	[] When the jaw is closed slightly more than in [o] and the lips remain rounded, the vowel produced is [ʊ] as in "book". [ʊ] is described as high-__________lax rounded.
high tense	[] [ʊ] is _____-back lax rounded. The other high-back vowel is [u] as in "boot." [ʊ] and [u] form a pair which differ primarily in degree of muscular tension. [ʊ] is lax; [u] is ________.
high-back high-back	[] The [u] in "boot" is _______-__________tense rounded. The [ʊ] in "book" is ________-__________lax rounded.
tense	[] The two back vowels that are lax are [ɑ] and [ʊ]. The other three back vowels -- [u], [o], [ɔ] -- are ____________.

unrounded	[] Lip rounding is used to describe the back vowels [u], [ʊ], [o], and [ɔ]. The vowel [ɑ] is described as low-back, lax, ____________________.
higher low	[] The degree of jaw opening will vary from one individual to another, but the relative relationship between the vowels will remain constant. [i] is always higher than [ɪ]; [e] is always ____________than [ɛ], and [æ] is the ________-front lax vowel.
mid	[] The relative relationship with the back vowels also holds true. [u] is always higher than [ʊ]; [ɔ] is always higher than [ɑ]; and [o] is the only _____-back vowel.
five five	[] To review, there are _______front vowels: [i], [ɪ], [e], [ɛ], and [æ]. There are ________back vowels: [u], [ʊ], [o], [ɔ], and [ɑ].
	[] There are four central vowels: [ɝ] in "bird" -- [bɝd] [ʌ] in "but" -- [bʌt] [ɚ] in "butter -- [bʌtɚ] [ə] in "above" -- [əbʌv]
four	[] All of the central vowels are mid-central. This means that there is no important change in the jaw for any of the _________ mid-central vowels.
lax	[] There is no lip rounding with any of the four mid-central vowels. But there is change in muscular tension. The mid-central vowel [ɝ] is tense; the mid-central vowels [ʌ], [ɚ], [ə], are all _______.
central	[] Two mid-central vowels, [ʌ] in "but" and [ə] in "above", have identical descriptions; mid-central lax. Both [ʌ] and [ə] are mid-__________lax vowels.
mid lax	[] For all practical purposes, the vowels [ʌ] and [ə] are identical in production. Both are _____-central _____ vowels.
stressed	[] Two phonetic symbols are needed, nonetheless, for the [ʌ] in "but" refers to a stressed syllable while the [ə] in "above" refers to the unstressed syllable. The [ʌ] in the second syllable of "above" [əbʌv] is used because that syllable is ________________.

[ə]	[] The first syllable in "above" [əbʌv] is not stressed, so the symbol [___] is used.
[ʌ] [ə]	[] Although [ʌ] and [ə] sound essentially the same, [ ] is used for a stressed syllable and [___] is used for an unstressed syllable.
mid-central lax	[] Both [ʌ] and [ə] are _______-________ __________.
"r"-colored "r"-colored	[] The other two mid-central vowels are described as "r"-colored. [ɝ] in "bird" is mid-central tense "r"-"r"-colored. ______________. [ɚ] in "butter" is mid-central lax "r"-______________.
lax "r"-colored	[] The only difference between the [ɝ] in "bird" and the [ɚ] in "butter" is that [ɝ] is tense and [ɚ] is ________. Both are mid-central vowels and are "___"-________________.
tense [ɚ]	[] For all practical purposes, the vowels [ɝ] and [ɚ] are made in the same way with the exception of muscular tension in their production. [ɝ] is ________ and [___] is lax.
lax	[] The major purpose for distinguishing between the two "r"-colored vowels is that [ɝ] is always used in stressed syllables (remember that it is tense) and that [ɚ] is always used in unstressed syllables (remember that it is ____________).
mid tense "r"-colored	[] There are four central vowels. All of them are ______- central. [ɝ] is the one ___________ vowel. [ɝ] and [ɚ] are "___"-________________.

APPENDIX C

BUTTON TRAINING TAPE: FIRST DAY

CODE	FRAME	OPERATOR'S INSTRUCTIONS	
1	1	PUSH BUTTON 1	OPERATOR HOLDS CHILD'S HAND AND PUSHES BUTTONS PLACING AN M&M IN THE CHILD'S MOUTH AFTER EACH CORRECT RESPONSE.
1	2	PUSH BUTTON 1	
1	3	PUSH BUTTON 1	
1	4	PUSH BUTTON 1	
1	5	PUSH BUTTON 1	SUBJECT PUSHES, M&M PLACED IN S's MOUTH
1	6	PUSH BUTTON 1	
4	7	PUSH BUTTON 4	OPERATOR PUSHES WITH SUBJECT, M&M PLACED ON TABLE IN FRONT OF SUBJECT.
4	8	PUSH BUTTON 4	
4	9	PUSH BUTTON 4	
4	10	PUSH BUTTON 4	
4	11	PUSH BUTTON 4	SUBJECT PUSHES, M&M GIVEN.
4	12	PUSH BUTTON 4	
1	13	PUSH BUTTON 1	OPERATOR POINTS, M&M GIVEN, HOPPER CLEARED, FROM THIS POINT ON, M&M'S ARE ALLOWED TO COLLECT IN HOPPER. OPERATOR POINTS.
1	14	PUSH BUTTON 1	
4	15	PUSH BUTTON 4	
4	16	PUSH BUTTON 4	
1	17	PUSH BUTTON 1	
4	18	PUSH BUTTON 4	
4	19	PUSH BUTTON 4	
1	20	PUSH BUTTON 1	
4	21	PUSH BUTTON 4	
1	22	PUSH BUTTON 1	
1	23	PUSH BUTTON 1	
4	24	PUSH BUTTON 4	
3	25	PUSH BUTTON 3	OPERATOR PUSHES WITH SUBJECT.
3	26	PUSH BUTTON 3	
3	27	PUSH BUTTON 3	
3	28	PUSH BUTTON 3	SUBJECT PUSHES.
3	29	PUSH BUTTON 3	

BUTTON TRAINING TAPE: FIRST DAY

CODE	FRAME	OPERATOR'S INSTRUCTIONS
1	30	PUSH BUTTON 1 OPERATOR POINTS
1	31	PUSH BUTTON 1
3	32	PUSH BUTTON 3 OPERATOR POINTS
3	33	PUSH BUTTON 3
1	34	PUSH BUTTON 1
3	35	PUSH BUTTON 3
1	36	PUSH BUTTON 1
1	37	PUSH BUTTON 1
3	38	PUSH BUTTON 3
3	39	PUSH BUTTON 3
3	40	PUSH BUTTON 3
1	41	PUSH BUTTON 1
		END OF THE FIRST DAY, GIVE SUBJECT ALL OF THE M&M'S IN THE HOPPER.

BUTTON TRAINING TAPE: SECOND DAY

CODE	FRAME	OPERATOR'S INSTRUCTIONS
1	1	PUSH BUTTON 1
1	2	PUSH 1
3	3	PUSH BUTTON 3 OPERATOR HELPS AS NECESSARY
3	4	PUSH 3
4	5	PUSH BUTTON 4
4	6	PUSH 4
1	7	PUSH BUTTON 1
3	8	PUSH BUTTON 3
4	9	PUSH BUTTON 4
4	10	PUSH 4
3	11	PUSH 3
1	12	PUSH 1

BUTTON TRAINING TAPE: SECOND DAY

CODE	FRAME	OPERATOR'S INSTRUCTIONS
2	13	PUSH BUTTON 2
2	14	PUSH BUTTON 2 OPERATOR PUSHES WITH SUBJECT.
2	15	PUSH BUTTON 2
2	16	PUSH BUTTON 2
2	17	PUSH BUTTON 2 OPERATOR POINTS
2	18	PUSH BUTTON 2
4	19	PUSH BUTTON 4 OPERATOR POINTS
4	20	PUSH 4
2	21	PUSH BUTTON 2
2	22	PUSH 2
4	23	PUSH BUTTON 4
2	24	PUSH BUTTON 2
2	25	PUSH 2
2	26	PUSH 2
4	27	PUSH 4
4	28	PUSH 4
2	29	PUSH 2
4	30	PUSH 4
2	31	PUSH 2
2	32	PUSH 2
1	33	PUSH BUTTON 1
3	34	PUSH BUTTON 3
2	35	PUSH BUTTON 2
1	36	PUSH 1
4	37	PUSH BUTTON 4
2	38	PUSH 2
3	39	PUSH 3
4	40	PUSH 4
3	41	PUSH 3
2	42	PUSH 2
1	43	PUSH 1
2	44	PUSH 2
2	45	2

BUTTON TRAINING TAPE: SECOND DAY

CODE	FRAME	OPERATOR'S INSTRUCTIONS
4	46	4
3	47	3
2	48	2
3	49	3
3	50	3
1	51	1

[s] BTT-2

Listen for [s].
You will hear one word.
After you hear [s], you
will press button 1.

1	1	s:ʌ	Push button 1
1	2	sʌ	Push 1
1	3	ʌs:	Push 1
1	4	ʌs	Push 1
1	5	sʌ	1
1	6	ʌs	1
1	7	ɑs	1
1	8	sɑ	1
4	9		Push button 4

Now you will hear one word,
but [s] is not in the word.
You will not hear [s].
After you hear the word,
you will press button 4.

4	10	m:ʌ	Push button 4
4	11	mʌ	Push 4
4	12	ʌm:	4
4	13	ʌm	Push 4
4	14	bʌ	4
4	15	ʌb	4
4	16	gɛ	4
4	17	ɔg	4
1	18		Push button 1

Listen for [s].
You will hear one word.
If you don't hear [s],
you will press button 4.
When you hear [s], you will
press button 1.

1	19	s:ʌ	Push 1
1	20	sɑ	1
1	21	ɑs	1
4	22	ɑm	Push 4
4	23	mɑ	4
4	24	mʌ	4
1	25	sɔ	1
1	26	os	1
4	27	nɑ	4
1	28	is	1
4	29	ub	4
4	30	un	4
1	31	sɛ	1
4	32	in	4
1	33	sɑ	1

[s] I - 1

Training Tape Leader

1	1	Push button 1
4	2	Push button 4
2	3	Push button 2
3	4	Push 3
1	5	Push 1

Listen for [s].

You will hear one word.

[s] is in the word.

You will press button 1 after you hear the word.

1	6	sːʌ	Push button 1
1	7	sɑ	Push 1
1	8	su	1
1	9	ɑsː	1
1	10	ɔs	1
1	11	us	1
4	12		Push button 4

Now you will hear one word, but [s] is not in the word.

You will not hear [s].

You will press button 4 after you hear the word.

4	13	mːʌ	Push button 4
4	14	mɑ	Push 4
4	15	ɑm	4
4	16	gɛ	4
4	17	dɔ	4
4	18	ɑb	4
1	19		Push button 1

Listen for [s].

You will hear one word.

When [s] is not in the word, you will press button 4.

When [s] is in the word, you will press button 1.

1	20	sɑ	Push 1
1	21	ɑs	1
4	22	mɑ	Push 4
4	23	ɑm	4
1	24	is	1
4	25	ig	4
4	26	gɛ	4
1	27	sɛ	1
4	28	ɑb	4
1	29	ɔs	1
1	30	sɑ	1

Program

1	1	sɑ
4	2	mɑ
1	3	sɑ
4	4	gi
4	5	ne
1	6	su
4	7	bɑ
1	8	si
4	9	vɔ
1	10	si
4	11	po
4	12	mju
1	13	sɔ
4	14	wɪ
4	15	ru
4	16	daʊ
1	17	se
4	18	hɑ
1	19	su
1	20	sɔ
4	21	fɛ
4	22	kɔ
1	23	saɪ
1	24	sɛ
4	25	zɔɪ
1	26	sɪ
1	27	so
4	28	tɛ
1	29	saʊ
4	30	θi
1	31	ɑs
1	32	ɑs
4	33	ɑdʒ
1	34	ɛs
4	35	ʊl
1	36	os
4	37	ob
4	38	ɪŋ
1	39	ɛs
4	40	aɪð
1	41	ɔɪs
4	42	ɛk
1	43	ɛs
1	44	ɔs
1	45	es
1	46	ɔs
4	47	ʌt

1	48	ɪs
1	49	jus
4	50	iʃ
4	51	ʊv
4	52	ɔɪf
1	53	ɛs
4	54	æθ
4	55	ug
4	56	ɑtʃ
4	57	ud
1	58	aʊs
1	59	ɪs
1	60	ɜs
1	61	sɑ
1	62	ɑs
4	63	ʒi
4	64	jun
1	65	sæ
4	66	zæ
1	67	ɪrs
1	68	su
1	69	ɪs
4	70	ot
4	71	tʃaɪ
1	72	ɔs
1	73	ɪs
4	74	aɪʃ
4	75	ɔdʒ
4	76	hæ
1	77	ʌs
4	78	ɑθ
4	79	ðu
4	80	je
4	81	pɛ
1	82	ɑs
4	83	ʊrʃ
4	84	lʌ
1	85	aʊs
1	86	sɔ
4	87	aɪθ
1	88	sɑr
1	89	si
1	90	sʌ

[s] I - 2

Training Tape Leader

1	1	Push button 1
4	2	Push button 4
2	3	Push button 2
3	4	Push 3
1	5	Push 1

Listen for [s].

You will hear two words.

[s] is at the beginning of the first word.

You will press button 1 after you hear [s].

1	6	sːʌ	mʌ	Push button 1
1	7	sɑ	mɑ	Push 1
1	8	sɑn	mɑn	1
1	9	sip	mip	1
1	10	sɑ	pɛ	1
1	11	su	nɛ	1
1	12	sɑ	gɔ	1
2	13			Push button 2

Listen for [s].

You will hear two words.

[s] is at the beginning of the second word.

You will press button 2 after you hear [s].

2	14	mʌ	sːʌ	Push button 2
2	15	mɑ	sɑ	Push 2
2	16	mɑn	sɑn	2
2	17	mip	sip	2
2	18	pɛ	sɑ	2
2	19	nɛ	su	2
2	20	gɔ	sɑ	2
1	21			Push button 1

Listen for [s].

You will hear two words.

When [s] is at the beginning of the second word, you will press button 2.

When [s] is at the beginning of the first word, you will press button 1.

1	22	sɑ	pi	Push 1
1	23	sɛ	gɪ	1
2	24	mɪ	sɛ	Push 2
2	25	nɪ	su	2
2	26	dɪ	sɑ	2
2	27	dɑ	sɛ	2
1	28	su	pɛ	1
1	29	sɑ	nɛ	1
1	30	su	gɔ	1
2	31	nɪ	sɑ	2
1	32	sɑ	mu	1

Program				
1	1	sɑ	mu	
1	2	sɑ	ni	
1	3	su	bɛ	
2	4	vɛ	sɑ	
2	5	gɔ	sɪ	
1	6	si	rʌ	
2	7	ʒe	sɔɪ	
1	8	saɪ	wʌ	
2	9	pæ	su	
1	10	so	dʒɝ	
1	11	sop	mu	
2	12	lɛ	sem	
2	13	bjun	sɛl	
2	14	ðæ	sin	
1	15	sʌn	javk	
1	16	sup	mʌd	
1	17	sɪŋ	pe	
1	18	saɪn	ril	
2	19	hɪr	sak	
2	20	nem	sɪk	
3	1			Push button 3
3	2			Push 3
3	3			3
3	4	sɑ	sɑ	Push 3
3	5	su	su	3
3	6	sɑ	su	3
1	7	sɑ	mɪ	1
2	8	mɑ	su	2
3	9	sɑ	sɑ	3
3	10	sɑ	sɛ	3
3	11	sɛ	sɔ	3
1	12	sɔ	nɪ	1
2	13	gi	so	2
3	14	sɔ	sɛ	3
3	15	sɛ	so	3
3	16	sɑ	se	3
3	17	su	su	
3	21	sɑ	sɑ	
3	22	su	su	
2	23	mɪ	sav	
1	24	sɛ	gɑr	
2	25	lɝ	so	
3	26	sɛ	su	
3	27	sɔ	si	
3	28	sɑ	sʊ	
1	29	se	dɔɪ	
1	30	si	væ	
2	31	kɑ	sun	
2	32	wɛ	sɛnd	
1	33	sɝ	fɔʒ	
2	34	dʒæv	sɔŋ	
3	35	sim	so	
3	36	sʌm	sɔŋ	
3	37	sɔ	sɛl	
1	38	sev	tɔl	
1	39	sɪŋk	tʃɛr	
3	40	sɛd	sɪŋ	
4	1			Push button 4
4	2			Push 4
4	3			4
4	4	mɑ	mɑ	Push 4
4	5	mɛ	mɛ	4
4	6	mɛ	mɑ	4
1	7	sɑ	nɪ	1
3	8	sɑ	su	3
2	9	dɔ	su	2
4	10	mɔ	nɛ	4
4	11	ni	dɑ	4
3	12	su	sɛ	3
2	13	pɛ	sɑ	2
1	14	so	ge	1
4	15	gɛ	gɪ	4
4	16	nɪ	mɛ	4
4	17	pɑ	lu	
4	41	mɑ	mɑ	
4	42	nɔ	nɔ	
2	43	bʌ	saɪ	
4	44	vju	nɔ	
3	45	sæ	so	
3	46	sɪ	sʊ	
1	47	sɛ	kʊr	
3	48	sɔ	se	
4	49	ðɑ	gi	
4	50	rɛ	laʊ	
1	51	skaɪ	ʒɛ	
3	52	sɔ	sʌn	
2	53	tɛ	sɪks	
4	54	po	jin	
4	55	luf	kæg	
4	56	bʊk	ðɛr	
2	57	daʊn	sɝv	
3	58	sem	sʌmɚ	
4	59	fju	dʒɑb	
1	60	sɛns	zu	
2	61	tʌbl̩	sɝkl̩	
1	62	[illegible]ip	tʃaɪld	
1	63	[illegible]d	ʃed	
1	64	smaɪl	fjub	
2	65	θɔɪp	spɛl	
3	66	sʌni	seg	
3	67	sɑrk	spun	
3	68	sæŋ	stʊd	
2	69	ʃɛrn	skɪn	
4	70	dʒʌmp	vɛri	
1	71	sɛkənd	ʃud	

Note: Instructions embedded in the programs have their own number sequence, in this case 1-17. Frame 21 continues the program proper.

1	72	sitəd	ziro
2	73	θri	spaɪ
2	74	tɛg	sɪli
2	75	zul	skul
2	76	ʃeləm	sɛvən
4	77	pɔɪnt	dɔlɚ
1	78	sæd	θæŋk
4	79	zon	fem
1	80	sop	θɛrg
2	81	ʃig	slip
3	82	suf	sæt
4	83	faɪnd	wɔtɚ
1	84	sɪk	tɔk
2	85	ʃɑr	se
1	86	stɔrɪ	θaʊmɪ
1	87	sin	θɪŋ
2	88	ʃɝt	sɝv
4	89	θɔt	ʃɔɪd
3	90	swip	swit

[s] I - 3

Training Tape Leader

1	1			Push button 1
4	2			Push button 4
2	3			Push button 2
3	4			Push 3
1	5			Push 1

Listen for [s]. You will hear two words. [s] is at the end of the first word. You will press button 1 after you hear [s].

1	6	ɑs	ɑm	Push button 1
1	7	ɔs	ɔm	Push 1
1	8	dɔs	dɔm	1
1	9	fis	fim	1
1	10	ɑs	ɑm	1
2	11			Push button 2

Listen for [s]. You will hear two words. [s] is at the end of the second word. You will press button 2 after you hear [s].

2	12	ɑm	ɑs	Push button 2
2	13	ɔm	ɔs	Push 2
2	14	dɔm	dɔs	2
2	15	fim	fis	2
2	16	ɑm	ɑs	2
1	17			Push button 1

Listen for [s]. You will hear two words. When [s] is at the end of the second word, you will press button 2. When [s] is at the end of the first word, you will press button 1.

1	18	ɑs	ɪp	Push 1
1	19	is	ɪg	1
2	20	ɪm	ɑs	Push 2
2	21	ɑp	us	2
2	22	ɪr	us	2
1	23	us	ɪd	1
1	24	ɑs	ɪg	1
2	25	ɛb	ɛb	2
2	27	ɛp	ɔs	2
1	28	ɑs	ol	1

Program

1	1	ɑs	um	
1	2	ɑs	in	
1	3	us	ɛp	
2	4	ɛr	ɑs	
2	5	ɔv	ɪs	
1	6	is	ʌl	
2	7	eŋ	ɔɪs	
1	8	aɪs	ʌdʒ	
2	9	æb	jus	
1	10	os	ɝg	
1	11	lɛs	eð	
2	12	lʌm	pæs	
2	13	ig	vɔɪs	
2	14	pɑdʒ	ðɪs	
1	15	mɪs	nub	
1	16	praɪs	ɛnd	
1	17	ɛls	ʌp	
1	18	græs	bʊk	
2	19	jʊr	aɪs	
2	20	dʌn	hɔrs	
3	1			Push button 3
3	2			Push 3
3	3			3
3	4	ɑs	ɑs	Push 3
3	5	us	us	3
3	6	ɑs	us	3
1	7	ɑs	um	1
2	8	ɑm	is	2
3	9	ɑs	ɑs	3
3	10	is	ɑs	3
2	11	ɛp	os	2
1	12	is	ɑg	1
3	13	os	us	3
3	14	ɑs	ɔs	3
3	15	us	us	

3	21	ɑs	ɑs	
3	22	us	us	
2	23	ɪm	aʊs	
1	24	ɛs	ɑrv	
2	25	ɝð	os	
3	26	ɛs	us	
3	27	ɔs	is	
3	28	ɑs	ʊs	
1	29	es	ɔɪn	
1	30	is	æŋ	
2	31	jɑʒ	kɪs	
2	32	ɔɪtʃ	lɔs	
1	33	pis	ruv	
2	34	nɑf	dæns	
3	35	ʌs	laɪks	
3	36	kʌps	gɛs	
3	37	fes	hops	
1	38	tɔks	gərɑʒ	
1	39	haʊs	ðiz	
3	40	prɛs	kʌts	
4	1			Push button 4
4	2			Push 4
4	3			4
4	4	ɑm	ɑm	Push 4
4	5	im	im	4
4	6	ɑm	ip	4
1	7	ɑs	um	1
3	8	us	us	3
2	9	ɪp	is	2
4	10	ɪp	um	4
4	11	ɔb	in	4
4	12	un	ɛb	
3	13	ɑs	os	3
1	14	is	ʌb	1
2	15	ɔb	es	2
4	16	ɪp	ɑm	4
4	17	ɔp	ɔp	
4	41	ɑm	ɑm	
4	42	ɔp	ɔp	
2	43	ædʒ	aɪs	
4	44	juʒ	ɔb	
3	45	ʌs	os	
3	46	ɪs	ʊs	
1	47	ɛs	ʊrt	
3	48	ɔs	es	
4	49	ɑz	in	
4	50	ɛk	aʊg	
1	51	res	jɔɪd	
3	52	klos	fɪns	
2	53	prɑt	jɛs	
4	54	waʊl	vɪŋ	
4	55	mʌk	ɔrb	

4	56	ɔf	wɪð
2	57	boθ	ples
3	58	kɔrs	wɔnts
4	59	ənʌðɚ	kætʃ
1	60	wʌns	frɛʃ
2	61	pɔɪdz	grups
1	62	kes	brɔt
1	63	əkrɔs	dʒʌdʒ
1	64	fɔrs	praʊʃ
2	65	lɪrθ	kʊks
3	66	əˈnɛs	lɪks
3	67	dʒɔfs	prɛs
3	68	æks	tʃæns
2	69	təruʃ	pɝpəs
4	70	raɪt	vɪlɪdʒ
1	71	jus	jʊrz
1	72	bʊks	fɪʃ
2	73	təˈgɛðɚ	drɛs
2	74	diˈwɔθ	krɔs
2	75	əpluθ	ˈɔfɪs
2	76	gaʊz	maʊs
4	77	hɛlθ	rodz
1	78	naɪs	naɪt
4	79	kot	beʒ
1	80	ɪnˈkris	əˈleʃ
2	81	fledz	meks
3	82	dæns	maʊs
4	83	fɪnɪʃ	bilivz
1	84	ɛls	ɝθ
2	85	dʒeθ	ples
1	86	prɑmɪs	traɪʃ
1	87	bæks	bæθ
2	88	bɪt	prɪns
4	89	wɔʃ	dɔɪt
3	90	prədus	præktɪs

[s] I - 4

Training Tape Leader

1	1	Push button 1
4	2	Push button 4
2	3	Push button 2
3	4	Push 3
1	5	Push 1

Listen for [s]. You will hear two words. [s] is in the middle of the first word. When you hear [s], you will press button 1.

1	6	asɑ	amɑ	Push button 1
1	7	oso	omo	Push 1
1	8	ɑsu	ɑmu	1

1	9	ɑsp	ɑmp	1
1	10	esp	emp	1
2	11			Push button 2

Listen for [s]. You will hear two words. [s] is in the middle of the second word. When you hear [s], you will press button 2.

2	12	ɑmɑ	ɑsɑ	Push button 2
2	13	omo	oso	Push 2
2	14	ɑmu	ɑsu	2
2	15	ɑmp	ɑsp	2
2	16	emp	esp	2
1	17			Push button 1

Listen for [s]. You will hear two words. When [s] is in the middle of the second word, you will press button 2. When [s] is in the middle of the first word, you will press button 1.

1	18	ɑsɑ	ɑmu	Push 1
1	19	ɑsa	umə	1
2	20	ɛmə	ɑsu	Push 2
2	21	ɪpe	usə	2
1	22	ise	ʌbɑ	1
2	23	ʌru	ɛsi	2
2	24	unɑ	osɑ	2
1	25	osi	upə	1
1	26	usi	ɛpɛ	1
2	27	æmɛ	isɔ	2
1	28	ɑse	ɛgə	1

Program

1	1	ɑsɑ	umu	
1	2	ɑsɑ	ini	
1	3	usi	ɛpɛ	
2	4	ɛgə	ɑse	
2	5	ɔle	ɪso	
1	6	isə	ʌru	
2	7	enɚ	ɔɪsɚ	
1	8	aɪse	əvu	
2	9	æmi	juso	
1	10	osi	ɝbə	
1	11	lɪsən	lɛjə	
2	12	uwɚ	bɪsaɪd	
2	13	əndʒep	pæsɪŋ	
2	14	aʊmni	æskɪŋ	
1	15	ɪnstɛd	ɔfən	
1	16	bɛst	mɛʒɚ	
1	17	list	ʌðɚ	
1	18	ɔlso	watʃɪŋ	
2	19	ivən	ænsɚ	
2	20	gɑrdən	fæstɚ	
3	1			Push button 3
3	2			Push 3
3	3			3
3	4	ɑsɑ	ɑsɑ	Push 3
3	5	usɑ	ɑsɑ	3
2	6	ɑmə	ɑsɑ	2
1	7	usi	ɑnə	1
3	8	usi	ɑsə	3
3	9	isə	ɑsɚ	3
3	10	ɑsu	usi	3
1	11	ɑsu	ɪpe	1
2	12	ɛbə	usɛ	2
3	13	usɚ	ɑsi	3
3	14	usu	usi	3
3	21	ɑsɑ		ɑsɑ
3	22	usu		usi
2	23	ɪˈme		əsaʊ
1	24	ɛsən		ɑrle
2	25	ɝbni		oso
3	26	ɛslo		usaʊm
3	27	ɔsnə		isp
3	28	ɑsnɚ		usɚ
1	29	espə		ˈɔɪku
1	30	ise		æðən
2	31	ɪljaɪ		fɜst
2	32	ohɪŋ		pɜsən
1	33	ɔlmost		laʊgəl
2	34	pɔɪdni		mɪsɪŋ
3	35	æsk		rɛst
3	36	lɛsən		sɪstəm
3	37	plesɪŋ		ɪnsaɪd
1	38	pasɪbl		bɪzi
1	39	hɪmsɛlf		frɛndlɪ
3	40	drɛsɪŋ		dʒʌst
4	1			Push button 4
4	2			Push 4
4	3			4
4	4	ɑmɑ	ɑmɑ	Push 4
4	5	ɑmɑ	ɑpɑ	4
1	6	ɑsə	ɑpɔ	1
3	7	ɑsi	usə	3
4	8	ɛbɔ	ɪpu	4
2	9	ɪge	esɑ	2
4	10	ɪkɔ	ɪge	4
4	11	ɑmə	ɛpi	4
3	12	ɑsə	ɛsi	3
2	13	ʌbi	esu	2
1	14	usɑ	ɪgə	1
4	15	ɪgə	ɪmə	4

4	16	ɔne	ɔnu	4
4	41	ɑmɑ	ɑmɑ	
4	42	ɔˈne	ˈɔnu	
2	43	æpə	aɪsə	
4	44	juʒə	ɔŋgo	
3	45	ʌsɚ	ose	
3	46	ɪsi	ʊso	
1	47	ɛsu	ʊrkə	
3	48	ɔsu	esən	
4	49	ɑte	ɪri	
4	50	ɛtʃə	aʊnu	
1	51	kɔstli	ɛnzən	
3	52	fɔrsɪŋ	ɛskep	
2	53	kɛtɚ	resɪŋ	
4	54	pɔgdən	wifəl	
4	55	ɔlrɔɪ	tʌdʒpən	
4	56	butʃnɚ	lɛnji	
2	57	wɪʃɪŋ	dɪsaɪd	
3	58	tɛstɪŋ	nɛkst	
4	59	ɛdʒɪŋ	æftɚ	
1	60	prɛsɪŋ	wɪθaʊt	
2	61	lxʒən	dɪskʌvɚ	
1	62	haɪsɚ	mjuzɪk	
1	63	hɝsɛlf	fɪʃɚ	
1	64	sɪstɚ	repɔɪn	
2	65	vaʊtən	prɪnsli	
3	66	prɑmɪsɪŋ	jɛstɚde	
3	67	fæstɚ	hɔrsbæk	
3	68	tʃænsɪŋ	fɔrɛst	
2	69	wuθɚ	bɑksɪŋ	
4	70	hɛlθi	gretɚ	
1	71	ɔfəsɚ	frɛʃɚ	
1	72	pæsɪŋ	pʊʃɪŋ	
2	73	waɪzɚ	maɪsɛlf	
2	74	mʌntre	kənsɪdɚ	
2	75	kwɪzəl	lɪsən	
2	76	luʃmən	gɛsɪŋ	
4	77	oʃən	ɔfən	
1	78	mæstɚ	mʌnθli	
4	79	maʊθfʊl	plɛʒɚ	
1	80	græsi	grezli	
2	81	dʒæntɪŋ	dænsɪŋ	
3	82	ʌndɚstænd	lɛsən	
4	83	prɛzənt	prɪti	
1	84	naɪsli	ɪʃu	
2	85	lɪθɪn	rɪsiv	
1	86	əksɛpt	əpθɛk	
1	87	mɪsɪŋ	wɪʃɪŋ	
2	88	ɛniθɪŋ	pisɪŋ	
4	89	lɝʃənt	nʌθɪŋ	
3	90	prɛsɪŋ	dɪstənt	

[s] I - 5

Training Tape Leader

1	1		Push button 1
4	2		Push button 4
2	3		Push button 2
3	4		Push 3
1	5		Push 1

Listen for [s]. You will hear one word. [s] is at the beginning of the word. You will press button 1 after you hear [s].

1	6	sːə	Push button 1
1	7	sɑ	Push 1
1	8	sɑp	1
1	9	sup	1
3	10		Push button 3

Listen for [s]. You will hear one word. [s] is at the end of the word. You will press button 3 after you hear [s].

3	11	ɑsː	Push button 3
3	12	lɑs	Push 3
3	13	pɑs	3
3	14	pɛs	3
2	15		Push button 2

Listen for [s]. You will hear one word. [s] is in the middle of the word. You will press button 2 after you hear [s].

2	16	ɑsːə	Push button 2
2	17	ɑsi	Push 2
2	18	ɑsk	2
2	19	mæsk	2
1	20		Push button 1

You will hear one word. Listen for [s]. When [s] is at the end, you will press button 3. When [s] is in the middle, you will press button 2. When [s] is at the beginning you will press button 1.

1	21	sɑg	Push 1
2	22	ɑsi	Push 2
3	23	lɑs	Push 3
3	24	bus	3
1	25	sɑp	1
2	26	uso	2

1	27	sup	1
3	28	dis	3
2	29	ʌsk	2
2	30	ʌst	2
3	31	ɔs	3
1	32	sɑn	1

Program

1	1	sɑn	
2	2	ɑsu	
3	3	mɑs	
3	4	bis	
1	5	sep	
2	6	usən	
1	7	sɑr	
3	8	bris	
2	9	ɔsli	
2	10	lisi	
3	11	lɛs	
2	12	ɔlso	
2	13	aʊsən	
1	14	sɛr	
2	15	risəl	
1	16	sem	
3	17	praɪs	
1	18	saɪd	
1	19	supl	
3	20	ges	
2	21	pɜsən	
3	22	ðɪs	
1	23	sɜv	
3	24	jus	
1	25	sim	
1	26	smɔl	
2	27	risiv	
3	28	wʌns	
2	29	æsk	
3	30	drɛs	
4	1		Push button 4
4	2		Push 4
4	3		4
4	4	mæn	4
4	5	lɑp	4
4	6	ɑmo	4
4	31	ɑmɚ	
4	32	pɑv	
4	33	bɑn	
3	34	ðɛs	
1	35	sul	
2	36	bɛst	
4	37	rum	
3	38	ræləs	
4	39	vitʃən	
2	40	bisaɪd	
1	41	sun	
1	42	sʌm	
3	43	pæs	
4	44	bʊk	
2	45	lɪsən	
4	46	fɑðɚ	
1	47	saʊnd	
2	48	pɑsəbl	
3	49	kes	
2	50	list	
2	51	mɪsɪŋ	
3	52	ples	
1	53	sɛkənd	
4	54	tebl	
3	55	hɔrs	
3	56	vɔɪs	
3	57	gɛs	
4	58	bɪzi	
2	59	ɔfəsɚ	
1	60	smaɪl	
2	61	hɚsɛlf	
4	62	ʃʊd	
3	63	haʊs	
1	64	spik	
1	65	sɛvən	
4	66	mʌnθ	
3	67	mɪs	
1	68	sʌtʃ	
4	69	frɛʃ	
2	70	disaɪd	
1	71	sɛt	
4	72	kloz	
3	73	feməs	
4	74	wɪθɪn	
3	75	prɑməs	
2	76	jɛstɚde	
3	77	əkrɔs	
4	78	tren	
2	79	ænsɚ	
1	80	strit	
2	81	maɪself	
1	82	sʌmθɪŋ	
4	83	ɪŋlɪʃ	
4	84	nʌθɪŋ	
2	85	naɪsli	
4	86	ækʃən	
1	87	sʌpoz	
4	88	hɛlθi	
1	89	spɛʃəl	
4	90	tekən	

[s] I - 6

Training Tape Leader

1	1		Push button 1
4	2		Push button 4
2	3		Push button 2
3	4		Push 3
1	5		Push 1

Listen for [s]. You will hear one word. There is one [s] in the word. You will press button 1 when you hear one [s] in the word.

1	6	sːə	Push 1
1	7	ɑs	Push 1
1	8	ɑsə	Push 1
1	9	sɛpɪ	1
1	10	bosk	1
1	11	pes	1
3	12		Push button 3

Listen for [s]. You will hear one word. There is more than one [s] in the word. You will press button 3 when you hear two [s] in the word.

3	13	səˈso	Push 3
3	14	ˈsosə	Push 3
3	15	əˈsos	Push 3
3	16	seps	3
3	17	sisən	3
3	18	ɛspəs	3
4	19		Push button 4

Now you will hear one word, but [s] is not in the word. You will not hear [s]. After you hear the word, you will press button 4.

4	20	no	Push 4
4	21	nɑp	Push 4
4	22	lɛmp	4
4	23	mɑrd	4
1	24		Push button 1

You will hear one word. Listen for [s]. When there is no [s], you will press button 4. When there is more than one [s], you will press button 3. When there is one [s], you will press button 1.

1	25	sːə	Push 1
1	26	ɑs	1
3	27	səˈso	Push 3
3	28	ˈsosə	3
4	29	no	Push 4
4	30	nɑp	4
1	31	ɑsə	1
1	32	sɛpɪ	1
4	33	lɛmp	4
3	34	seps	3
1	35	spel	1
1	36	baɪs	1
1	37	gɔsəg	1
3	38	sisən	3
4	39	mɑrd	4
1	40	sɔ	1

Program

1	1	sɔ
1	2	ɔlso
1	3	lɛs
3	4	sɪks
4	5	maɪl
3	6	sɪns
1	7	æsk
4	8	grin
1	9	sɛd
1	10	sun
4	11	kɛri
1	12	pæs
1	13	ðɪs
1	14	skul
1	15	pɜsən
3	16	ɛskeps
1	17	haʊs
1	18	lɪsən
4	19	dizaɪɚ
3	20	sɜvəs
1	21	spik
1	22	sɛkənd
4	23	bɛtɚ
3	24	spes
1	25	praɪs
4	26	wɪʃ
1	27	ænsɚ
1	28	sɛvrəl
1	29	sizən
4	30	wɪθɪn
3	31	sɪstɚ
4	32	tude
1	33	tʃæns
1	34	soldʒɚ

4	35	ʃæl
1	36	pasəbl
3	37	ɛksprɛs
1	38	pɝhæps
1	39	maɪsɛlf
3	40	nɛsəsɛri
4	41	θri
1	42	præktəs
1	43	ʃɪps
1	44	kənsɪdɚ
1	45	sauθ

[s] I - 7

Training Tape Leader

1	1	Push button 1
4	2	Push button 4
2	3	Push button 2
3	4	Push 3
1	5	Push 1

Listen for [s]. You will hear two words. When the first word has a good [s], you will press button 1. When the second word has a good [s], you will press button 2.

1	6	saɪd	no	Push 1
2	7	no	saɪd	Push 2
2	8	nu	lɛs	2
1	9	jɛs	braʊn	1
2	10	mun	ɔlso	2
1	11	lɛsən	lardʒ	1
3	12			Push button 3

Listen for [s]. You will hear two words. When both words have a good [s], you will press button 3. When neither word has a good [s], you will press button 4.

3	13	saɪd	saɪd	Push 3
3	14	sɛd	saɪd	3
4	15	no	nʌn	4
4	16	ne	nop	4
3	17	es	les	3
3	18	lɪsən	lɛsən	3
1	19			Push button 1

Listen for [s]. You will hear two words. When [s] is in the first word, you will press button 1. When [s] is in the second word, you will press button 2. When [s] is in both words, you will press button 3. When [s] is in neither word, you will press button 4.

1	20	saɪd	no	Push 1
2	21	no	saɪd	2
3	22	saɪd	saɪd	3
4	23	no	nʌn	4
3	24	es	les	3
4	25	ne	nop	4
2	26	lɛd	lɛs	2
1	27	pæs	pætʃ	1
1	28	lɛsən	lɛmən	1
2	29	mɪlɪŋ	mɪsɪŋ	2
4	30	dɛr	ðɛr	4
3	31	sim	sim	3
1	32	sɛd	rɛd	1

Program

1	1	sɛd	rɛd
2	2	lɛft	lɛs
3	3	ɔlso	ɔlso
4	4	dɛr	dɛr
1	5	sim	bim
3	6	saɪd	saɪd
4	7	kɪŋ	kiŋ
2	8	pɔ	sɔ
1	9	sun	vun
1	10	pæs	pæʒ
2	11	praɪt	praɪs
1	12	jus	jutʃ
2	13	drɛz	drɛs
2	14	fʌm	sʌm
2	15	θʌtʃ	sʌtʃ
1	16	ænsɚ	ænʃɚ
1	17	saʊnd	ɭaʊnd
2	18	mɪz	mɪs
1	19	pɝsən	pɝtən
2	20	riʃiv	risiv
2	21	maɪɭɛlf	maɪsɛlf
2	22	[whistled]	bɛst
3	23	sɝv	sɝv
3	24	haʊs	haʊs
2	25	ɭɝ	sɝ
2	26	pleθ	ples
2	27	feʃ	fes
1	28	rɛst	rɛɭt
4	29	liʃt	liʃt

1	30	kes	[whistled]
1	31	æsk	æɬk
2	32	klot	klos
2	33	zɛkənd	sɛkənd
1	34	vɔɪs	vɔɪʃ
2	35	ðɪɬ	ðɪs
3	36	jɛs	jɛs
2	37	θɔrt	sɔrt
2	38	ɬkul	skul
1	39	wʌns	wʌnt
3	40	ðʌs	ðʌs
2	41	mɪθtɚ	mɪstɚ
1	42	hɔrs	hɔrɬ
1	43	ɔfɪs	ɔfɪʃ
4	44	feθfʊl	feθfʊl
1	45	sɛvən	tɛvən
1	46	kɪs	[whistled]
1	47	sɪŋ	ʃɪŋ
2	48	zɛnt	sɛnt
1	49	lɔs	lɔɬ
2	50	ɬno	sno
2	51	lɪθən	lɪsən
2	52	ɔfɪθɚ	ɔfɪsɚ
1	53	sɪlvɚ	ɬɪlvɚ
1	54	bisaɪd	[whistled]
4	55	prɛʃ	prɛɬ
2	56	ɪnɬtɛd	ɪnstɛd
2	57	ret	res
2	58	dɪθkəvɚ	dɪskəvɚ
1	59	dænsɪŋ	dænɬɪŋ
2	60	piɬ	pis
1	61	sold	θold
1	62	gɛs	gɛt
1	63	skaɪ	ɬkai
4	64	mɪt	mɪʃ
1	65	naɪs	naɪɬ
4	66	ɬev	ɬev
2	67	[whistled]	jɛstɚde
3	68	sim	sin
2	69	θaɪt	sait
1	70	pɑsəbl	pɑɬəbl
1	71	mæstɚ	mæθtɚ
1	72	mɪsɪŋ	mɪʃɪŋ
3	73	bisaɪd	disaɪd
1	74	prɪns	prɪnɬ
2	75	pɜhæpθ	pɜhæps
1	76	spɛnd	ɬpɛnd
2	77	[whistled]	sik
3	78	lɪsən	lɛsən
1	79	hɪstri	hɪʃtri
4	80	pɜpəʃ	pɜpəɬ
4	81	krɔθɪŋ	[whistled]
1	82	kənsɪdɚ	kənzɪdɚ
2	83	aɪɬi	aɪsi
1	84	aɛksɛpt	aɛkθɛpt
1	85	slip	ʃlip
2	86	ɬtɔr	stɔr
2	87	prɑmɪθ	prɑmɪs
2	88	[whistled]	aʊtsaɪd
2	89	fɔrθɪŋ	fɔrsɪŋ
1	90	soldʒɚ	ɬoldʒɚ

S II - 1

1	mɑ
2	nɛ
3	dɔ
4	sɑ
5	dɑ
6	sɑ
7	nu
8	su
9	si
10	aɪm
11	aɪn
12	ɑd
13	ɔs
14	ɑs
15	ɛd
16	is
17	unn
18	aɪs
19	daʊ
20	saʊ
21	ti
22	sɛ
23	ɛmɛ
24	ɑnɑ
25	ɑda
26	ɑsa
27	odo
28	oso
29	ose
30	unu
31	usu
32	udo
33	aʊn
34	ɔɪs
35	ɪd
36	is
37	tæ
38	sɑ
39	sʌ
40	ɛte
41	ɔɪse
42	ɔsi
43	aɪθ
44	us
45	sɛ
46	ɪʃ
47	ɪsɔ
48	ʌs
49	ʊse
50	sæ

S II - 2

1	mɑ
2	nɛ
3	dɑ
4	sɔɪ
5	dɑ
6	sɑ
7	nu
8	su
9	si
10	maɪ
11	so
12	se
13	de
14	sɛ
15	sɛd
16	ɑm
17	un
18	id
19	is
20	naɪn
21	naɪs
22	laʊd
23	ʌs
24	bʌs
25	lɛd
26	lɛs
27	drɛs
28	kip
29	kips
30	ɔrs
31	hɔrs
32	laid
33	slaɪd
34	ænd
35	sænd
36	ɑmɑ
37	unu
38	ɛdi
39	ɑsɑ
40	ɔlo
41	ɔlso
42	fɝ
43	fɝst
44	læst
45	ænd
46	ænsɚ
47	pɝt
48	pɝsən
49	fæt
50	fæst

51 bɛst
52 ænt
53 ænts
54 pænts
55 maɪl
56 smaɪl
57 smɔl
58 wɝ
59 wɜst
60 wʌnz
61 most
62 bɛst
63 ʃu
64 ðæt
65 sæt
66 sɪt
67 sɪti
68 wɪʃ
69 es
70 ples
71 plest
72 em
73 sem
74 ɛs
75 bɛst
76 ɜs
77 nɜs
78 θɜst
79 mɛsi
80 stɑp

S II - 3

1 mɑ
2 dɑ
3 sɔ
4 si
5 nɔɪ
6 sɔɪ
7 du
8 su
9 saɪ
10 aɪn
11 aɪs
12 naɪs
13 ɛd
14 ɛs
15 ɔn
16 is
17 pis
18 sup
19 sop
20 unu
21 uso
22 ɔso
23 ɔlso
24 ɛdi
25 ɛsi
26 mɛsl
27 lɛs
28 ed
29 es
30 kes
31 tim
32 sim
33 ʃi
34 sin
35 pæd
36 pæθ
37 pæs
38 pæst
39 naɪt
40 faɪt
41 saɪt
42 lip
43 slip
44 əslip
45 ost
46 most
47 mɪs
48 mɪstɚ
49 stɔr
50 ɛs
51 bɛs
52 bɛst
53 rɛst
54 res
55 sev
56 jus
57 lɔs
58 lɔst
59 læst
60 saʊnd
61 saʊθ
62 sɔs
63 ðɪs
64 hwɪsəl
65 pɜsən
66 prɪns
67 wʌns
68 sɛns
69 sɛnt
70 sɛntɚ

71 lɛsən
72 lɪsən
73 lɪst
74 strit
75 trits
76 drɛs
77 drɛsɪŋ
78 nɛkst
79 kɪs
80 sɪstɚ

S II - 4

1 sɑ
2 si
3 sim
4 simd
5 ɛs
6 ɔs
7 rɔs
8 krɔs
9 krɔst
10 ist
11 ɛst
12 bɛst
13 so
14 sop
15 sopi
16 osi
17 ɛsi
18 mɛsi
19 es
20 les
21 ples
22 plesɪŋ
23 sɪŋ
24 sɪŋɪŋ
25 swɪŋɪŋ
26 mɪs
27 mɪsɪŋ
28 mɪstɚ
29 stɝ
30 ste
31 se
32 sem
33 semwʌn
34 sɪ
35 sɪt
36 sɪtɪŋ
37 sɪtɪŋ daʊn
38 es
39 tʃes
40 tʃesɪŋ
41 tʃesɪŋ mi
42 es
43 fes
44 fes hɪm
45 saɪ
46 saɪn
47 ðəsaɪn
48 læs
49 klæs
50 aʊɚ klæs
51 mɪs
52 mɪsɪŋ
53 ðɛr mɪsɪŋ
54 slip
55 əslip
56 hiz əslip
57 græs
58 græsi
59 græsi hɪl
60 sæ
61 sæt
62 hi sæt
63 hi sæt daʊn
64 skul
65 ðə skul
66 æt ðə skul
67 bʊks
68 ðə bʊks
69 gɛt ðə bʊks
70 stɑr
71 stɑrt
72 stɑrt ðɛr
73 ju stɑrt ðɛr
74 saɪd
75 aʊt saɪd
76 go aʊtsaɪd
77 krɔs
78 əkrɔs
79 go əkrɔs
80 go əkrɔs naʊ

S II - 5

1 si
2 sim
3 simd
4 aɪs
5 raɪs
6 praɪs
7 praɪst
8 mɪs

9 mɪsɪŋ
10 mɪstɚ
11 se
12 sem
13 sem we
14 aɪs
15 naɪs
16 hiz naɪs
17 gɛs
18 gɛsɪŋ
19 aɪm gɛsɪŋ
20 stɔr
21 ðə stɔr
22 æt ðə stɔr
23 əkrɔs
24 go əkrɔs
25 go əkrɔs naʊ
26 lɛsən
27 ðə lɛsən
28 du ðə lɛsən
29 græs
30 ðə græs
31 ðə grin græs
32 smaɪl
33 ə smaɪl
34 ə bɪg smaɪl
35 bɛst
36 ðə bɛst
37 ðə bɛst wʌn
38 sʌn
39 ðə sʌn
40 ðə hɑt sʌn
41 hɔrs
42 ðə hɔrs
43 si ðə hɔrs
44 si ðə hɔrs rʌn
45 sɔŋ
46 ə sɔŋ
47 sɪŋ ə sɔŋ
48 ju sɪŋ ə sɔŋ
49 mɪs
50 mɪstɚ
51 mɪstɚ smɪθ
52 most
53 ɔlmost
54 ɔlmost ɔl
55 ɔlmost ɔl əv ʌs
56 haʊs
57 ðə haʊs
58 ɪts ðə haʊs
59 pɜsən
60 ə pɜsən
61 ə naɪs pɜsən
62 ʃiz ə naɪs pɜsən
63 ðɪs
64 ðɪs mæn
65 ðɪs mæn ɪz naɪs
66 sʌm
67 sʌmθɪŋ
68 se sʌmθɪŋ
69 aɪ se sʌmθɪŋ
70 ɪts
71 ɪts hɪz
72 ɪts hɪz pɛnsəl
73 sɪt
74 aɪ sɪt
75 hi sɪts
76 hi sɪts daʊn
77 jɛs
78 se jɛs
79 ju se jɛs
80 ju se jɛs naʊ

S II - 6

1 sem
2 ðə sem
3 ðə sem wʌn
4 ples
5 ðə ples
6 θæts ðə ples
7 lɪsən
8 ju lɪsən
9 ju lɪsən tə mi
10 stænd
11 ju stænd
12 ju stænd ʌp
13 ju stænd ʌp nɛkst
14 gɛs
15 gɛsɪŋ
16 stɑp gɛsɪŋ
17 ju stɑp gɛsɪŋ
18 sɛd
19 hi sɛd
20 hi sɛd so
21 ðə stɔr
22 tu tə stɔr
23 go tə ðə stɔr
24 go tə ðə stɔr fɜst
25 sʌmwʌn
26 aɪ sɔ sʌmwʌn
27 aɪ sɔ sʌmwʌn æt skul
28 ænsɚ
29 ænsɚ mi

30 ænsɚ maɪ kwɛstʃən
31 sɪstɚ
32 ðæts maɪ sɪstɚ
33 maɪ sɪstɚ ɪz naɪs
34 fæst
35 hiz fæst
36 ʃiz fæstɚ
37 ʃi wɜks fæstɚ
38 pɛnsəl
39 maɪ pɛnsəl
40 ðæts maɪ pɛnsəl
41 ɪts nɑt hɚ pɛnsəl
42 ðə hɔrs
43 ðə hɔrs rʌnz
44 ðə hɔrs rʌnz fæst
45 ɪts ə fæst hɔrs
46 ðə slaɪd
47 ple ɔn ðə slaɪd
48 lɛts ple ɔn ðə slaɪd
49 lɛts ple ɔn ðə swɪŋ
50 ə stɑr
51 ə braɪt stɑr
52 ɪts ə braɪt stɑr
53 du ju si ðə stɑr
54 prægktɪs
55 wi præktɪs ə lɑt
56 wi præktɪs ðɪs we
57 hi laɪks tə præktɪs
58 stret
59 ə stret stɪk
60 maɪ stɪk ɪz stretɚ
61 ə pis
62 ə pis əv paɪ
63 ə smɔl pis əv paɪ
64 aɪd laɪk ə smɔl pis
65 go aʊtsaɪd
66 lɛts go aʊtsaɪd
67 wiv bɛn aʊtsaɪd
68 lɛts ste ɪnsaɪd
69 snoɪŋ
70 ɪt wʌz snoɪŋ
71 ɪts stɑpt snoɪŋ naʊ
72 so wil mek snobɔlz
73 snikɚ
74 aɪ wɛr snikɚz
75 aɪ lɔst ə snikɚ
76 dɪd ju si maɪ snikɚ
77 jɛstɚde
78 wi sæŋ jɛstɚde
79 lɛts nɑt sɪŋ naʊ
80 lɛts ple ɪnstɛd

S II - 7

1 ðə sem we
2 se ɪt ðə sem we
3 ɪts izi tə se
4 wi sɛd ɪt ðɪs we bəfɔr
5 dʒʌst præktɪs ɪt
6 ʃiz fæst
7 bət hiz fæstɚ
8 hiz ðə fæstəst
9 hiz ðə bɛst rʌnɚ
10 hi wʌn ðə res
11 sɪt daʊn
12 hi sæt daʊn
13 ju sɪt daʊn nɛkst
14 naʊ stænd ʌp
15 ju stænd ʌp fɝst
16 naʊ aɪl stænd ʌp
17 aɪ stʊd ʌp sɛkənd
18 ɔl əv ʌs wɪl stænd ʌp
19 wɪr stɪl stændɪŋ
20 lɛts sɪt daʊn əgɛn
21 tɛl ʌs ə stɔri
22 hi laɪks sæd stɔriz
23 aɪ laɪk naɪs stɔriz
24 hwɑt stɔri du ju laɪk bɛst
25 hi told ə stɔri æt skul
26 hɪz klæs laɪkt ðə stɔri
27 æsk mi
28 æsk mi ðə kwɛstʃən
29 aɪ kən ænsɚ ɪt
30 dʒʌst æsk mi
31 si aɪ told ju so
32 ðə stɛrz
33 ðə stɛrz ɑr stip
34 hi wɔks əp ðə stɛrz
35 sʌmtaɪmz hi skɪps əp ðɛm
36 bət hi ɔlwez wɔks daʊn
37 ðæts bəkʌz hi fɛl wʌns
38 go aʊtsaɪd
39 lɛts ɔl go aʊtsaɪd
40 lɛts nɑt ste ɪnsaɪd
41 ɔlmost ɛvriwʌn wɛnt aʊtsaɪd
42 lɛts ple ɔn ðə slaɪd
43 sʌmwʌn pled ɔn ðə swɪŋ
44 ðæts hwɑt aɪ dɪd jɛstɚde
45 lɛts go bæk ɪnsaɪd
46 ɪts taɪm fɔr əs tə it
47 lɛts hɝi n̩ sɪt daʊn
48 pæs ðə sɔlt pliz
49 aɪ laɪk sɔlt ɔn maɪ sæləd
50 pʊt sʌm mɪlk ɪn hɝ glæs

51 ʃi drɪŋks lɑts əv mɪlk
52 ʃi its lɑts əv sændwɪtʃəz
53 taɪm fɔr skul
54 lɛts gɛt rɛdi fɔr skul
55 gɛt jʊr bʊks n̩ pɛnsəl
56 sʌmwʌnz muvd maɪ dɛsk
57 maɪ dɛsk ɪz mɪsɪŋ
58 aɪl sɪt nɛkst tə ju
59 sʌmwʌn wɪl brɪŋ maɪ dɛsk bæk
60 go tə ðə stɔr
61 lɛts go tə ðə stɔr
62 aɪ hæv sɛvən sɛns
63 hi hæz sɪks sɛns
64 ðæts ə lɑt tə spɛnd
65 wʌns aɪ hæd tɛn sɛns
66 hi hæd sɪkstin sɛns
67 wi gɑt sʌm lɑlipɑps
68 lɑlipɑps ɑr rili swit
69 ni ðɚ əv ʌs gɑt sɪk ðo
70 ʃi wʌz sɪk wʌns
71 ʃi wɛnt tə si ðə dɑktɚ
72 ðə nɚs wʌz vɛri naɪs
73 ʃi ɔlwez smaɪlz æt ʌs
74 taɪm tu slip
75 ɪts taɪm fɔr ʌs tə slip
76 ɪts pæst hɪz bɛdtaɪm
77 hiz səpost tə bi ɪn bɛd
78 wiv sɛd ə lɑt
79 wiv sɛd lɑts əv θɪŋz təde
80 ðɪs ɪz ðə læst sɛntəns

[r] BTT-2

Listen for [rə]. You will hear one word. After you hear [rə], you will press button 1.

1	1	rə	Push button 1
1	2	rʌ	Push 1
1	3	ɑr	Push 1
1	4	ɑr	Push 1
1	5	rʌ	1
1	6	ɑr	1
1	7	ɪr	1
1	8	rɑ	1
4	9		Push button 4

Now, you will hear one word, but [rə] is not in the word. You will not hear [rə]. After you hear the word, you will press button 4.

4	10	mːʌ	Push button 4
4	11	mʌ	Push 4
4	12	ʌm	Push 4
4	13	ʌm	Push 4
4	14	bʌ	4
4	15	ʌb	4
4	16	gɛ	4
4	17	ɔg	4
1	18		Push button 1

Listen for [rə]. You will hear one word. If you don't hear [rə], you will press button 4. When you hear [rə], you will press button 1.

1	19	rə	Push 1
1	20	rɑ	1
1	21	ɑr	1
4	22	ɑm	Push 4
4	23	mɑ	4
4	24	mʌ	4
1	25	rɔ	1
1	26	ɔr	1
4	27	nɑ	4
1	28	ɛr	1
4	29	ub	4
4	30	un	4
1	31	rɛ	1
4	32	ɪb	4
1	33	rɑ	1

[r] I - 1

Training Tape Leader

1	1	Push button 1
4	2	Push button 4
2	3	Push button 2
3	4	Push 3
1	5	Push 1

Listen for [rə]. You will hear one word. [rə] is in the word. You will press button 1 after you hear the word.

1	6	rə	Push button 1
1	7	rɑ	Push 1
1	8	ru	1
1	9	ɑr	1
1	10	ɔr	1
1	11	ɪr	1
4	12		Push button 4

Now you will hear one word, but [rə] is not in the word. You will not hear [rə]. You will press button 4 after you hear the word.

4	13	mːʌ	Push button 4
4	14	mɑ	Push 4
4	15	ɑm	4
4	16	gɛ	4
4	17	dɔ	4
4	18	ɑn	4
1	19		Push button 1

Listen for [rə]. You will hear one word. When [rə] is not in the word, you will press button 4. When [rə] is in the word, you will press button 1.

1	20	rɑ	Push 1
1	21	ɑr	1
4	22	mɑ	Push 4
4	23	ɑm	4
1	24	ɪr	1
4	25	ig	4
4	26	tɛ	4
1	27	rɛ	1
4	28	ɑb	4
1	29	ɔr	1
1	30	rɑ	1

Program

1	1	rɑ
4	2	mɑ
1	3	rɑ
4	4	gi
4	5	ne
1	6	ru
4	7	bɑ
1	8	ri
4	9	ʌ
1	10	ri
4	11	po
4	12	mju
1	13	rɔ
4	14	tɪ
4	15	ku
4	16	daʊ
1	17	re
4	18	hɑ
1	19	ru
1	20	rɔ
4	21	fɛ
4	22	kɔ
1	23	raɪ
1	24	rɛ
4	25	zɔɪ
1	26	rɪ
1	27	ro
4	28	tɛ
1	29	raʊ
4	30	θi
1	31	ɑr
1	32	ɑr
4	33	ɑdʒ
1	34	ɛr
4	35	ʊʒ
1	36	ɪr
4	37	ob
4	38	iʃ
1	39	ɛr
4	40	aɪð
1	41	ʊr
4	42	ɛk
1	43	ɛr
1	44	ɔr
1	45	ɪr
1	46	ɔr
4	47	ʌt
1	48	ɪr
1	49	ʊr
4	50	iʃ
4	51	ʊv
4	52	ɔɪf
1	53	ɛr
4	54	es
4	55	ug
4	56	ɑtʃ
4	57	ud
1	58	ɔr
1	59	ɪr
1	60	ʊr
1	61	rɑ
1	62	ɑr
4	63	ʒi
4	64	jun
1	65	ræ
4	66	zæ
1	67	ɪr
1	68	ru
1	69	ɛr
4	70	ot
4	71	tʃaɪ
1	72	ɔr
1	73	ɪr
4	74	aɪʃ
4	75	ɔdʒ
4	76	hæ
1	77	ɑr
4	78	ɑθ
4	79	ðu
4	80	fe
4	81	pɛ
1	82	ɑr
4	83	ʊn
4	84	dʌ
1	85	ɔr
1	86	rɔ
4	87	aɪθ
1	88	ɑr
1	89	ri
1	90	rʌ

[r] I - 2

Training Tape Leader

1	1	Push button 1
4	2	Push button 4
2	3	Push button 2
3	4	Push 3
1	5	Push 1

Listen for [r:ə]. You will hear two words. [r:ə] is at the beginning of the first word. You will press button 1 after you hear [r:ə].

1	6	rə	mʌ	Push button 1
1	7	ra	ma	Push 1
1	8	ran	man	1
1	9	rip	mip	1
1	10	ra	pɛ	1
1	11	ru	nɛ	1
1	12	ra	gɔ	1
2	13			Push button 2

Listen for [r:ə]. You will hear two words. [rə] is at the beginning of the second word. You will press button 2 after you hear [rə].

2	8	mʌ	rə	Push button 2
2	9	ma	ra	Push 2
2	10	man	ran	2
2	11	mip	rip	2
2	12	pɛ	ra	2
2	13	nɛ	ru	2
2	14	gɔ	ra	2
1	15			Push button 1

Listen for [rə]. You will hear two words. When [rə] is at the beginning of the second word, you will press button 2. When [rə] is at the beginning of the first word, you will press button 1.

1	16	rə	pi	Push 1
1	17	rɛ	gɪ	1
2	18	mɪ	rɛ	Push 2
2	19	nɪ	ru	2
2	20	dɪ	ra	2
2	21	da	rɛ	2
1	22	ru	pɛ	1
1	23	ra	nɛ	1
1	24	ru	gɔ	1
2	25	nɪ	ra	2
1	26	ra	mu	1

Program

1	1	ra	mu	
1	2	ra	gi	
1	3	ru	ʃe	
2	4	fɛ	ra	
2	5	bo	rɪ	
1	6	ri	dʌ	
2	7	tʃe	rɔɪ	
1	8	raɪ	vʌ	
2	9	næ	ru	
1	10	ro	su	
1	11	ræn	sɛg	
2	12	dʒop	raɪd	
2	13	θæŋ	roz	
2	14	kʊb	rʌʃ	
1	15	rɪŋ	deb	
1	16	ræn	kɪs	
1	17	rɪtʃ	pæs	
1	18	res	θɪn	
2	19	sut	rɔk	
2	20	muv	ril	
3	1			Push button 3
3	2			Push 3
3	3			3
3	4	ra	ra	Push 3
3	5	ri	ri	3
3	6	ro	ro	3
3	7	ru	ru	3
3	8	rɛ	rɛ	3
3	9	rɔɪ	rɔɪ	3
1	10	rɔ	dʒɔ	1
1	11	rɛt	mɛt	1
2	12	tʃæ	ræ	2
2	13	ʃæn	ræn	2
3	14	ru	ru	3
3	15	rub	rub	3
3	16	rʌ	rʌ	3
3	17	rʌn	rʌn	3
3	21	ra	ra	
3	22	ru	ru	
2	23	tɪ	raʊ	
1	24	rɛ	ba	
2	25	pɔɪ	ro	
3	26	rɛ	ru	
3	27	rɔ	ri	
3	28	ra	rʊ	
1	29	re	tʃɔɪ	
1	30	ri	sæ	
2	31	nɔdʒ	rɛd	
2	32	ʃæg	rez	
1	33	raɪz	pʊd	
2	34	hund	rɛdɪ	
3	35	raɪt	raɪt	
3	36	rɛd	rɛdɚ	
3	37	rɔŋ	raɪt	
1	38	rolɪŋ	kolɪŋ	
1	39	rust	lus	
3	40	ridɚ	ridz	
4	1			Push button 4
4	2			Push 4
4	3			4

4	4	ma	ma	Push 4
4	5	no	no	4
4	6	tʃæ	tʃæ	4
4	7	dʒɛ	dʒɛ	4
4	8	ʃu	ʃu	4
4	9	ʃuz	ʃuz	4
1	10	rɔ	sɔ	1
1	11	rʌm	sʌm	1
2	12	zu	ru	2
2	13	fe	re	2
3	14	ri	ri	3
3	15	rid	ridz	3
3	16	ridz	raɪt	3
2	17	gæ	ræ	2
1	18	rog	kop	1
4	19	hɔdʒ	pɔdʃ	4
4	20	θæŋ	bɪŋ	4
2	21	vaʊs	res	2
3	22	rɑt	redʒ	3
1	23	rot	tæn	1
4	24	mɑ	mɑ	4
4	41	mɑ	mɑ	
4	42	nɔ	nɔ	
2	43	gʌ	raɪ	
4	44	fu	tʃɔ	
3	45	ræ	ro	
3	46	rɪ	rʊ	
1	47	rɛ	bʊ	
3	48	rɔ	re	
4	49	pɑ	di	
4	50	mɛ	faʊ	
1	51	rʌg	jɛb	
3	52	rop	raʊnd	
2	53	skɔɪf	rɪbən	
4	54	ʌŋkəm	dʒɔɪps	
4	55	fɛkt	skæŋk	
1	56	rʊfs	bʊʃ	
2	57	lɔŋ	ritʃ	
3	58	redɪo	redɪoz	
4	59	noʃən	hwaɪnɑt	
1	60	rulɪŋ	lɪsən	
2	61	wɔbz	ræbɪt	
1	62	ril	wil	
1	63	renbo	lɛŋθ	
1	64	rendɪr	bentʃ	
2	65	wɪmen	ritʃ	
3	66	rɛbəl	rabɪn	
3	67	rezɪz	raɪdz	
3	68	rizən	rikɔrd	
2	69	waɪdɚ	raɪdɚ	
4	70	stɪŋkɪ	stɪndʒɪ	
1	71	rubi	juzəz	
1	72	rɔŋ	lɔŋ	
2	73	bebɪ	rɛdɪ	
2	74	ɪŋɪŋ	rɪŋɪŋ	
2	75	wɔdʒə	rʌʃəz	
2	76	wɔŋ	raɪt	
4	77	kɪtʃən	kʊkɪŋ	
1	78	ritʃɪŋ	ɪtʃi	
4	79	ɔfən	ənʌf	
1	80	rɑki	jætʃ	
2	81	edio	rɑbz	
3	82	raɪtɚ	redɚ	
4	83	ɛdi	esəz	
1	84	rʌb	lʌvɚ	
2	85	enɪde	rendɪr	
2	86	wæsti	rɛstɪŋ	
1	87	renbo	wɪndo	
3	88	rust	rust	
4	89	ustə	smæk	
3	90	rʌnts	res	

[r] I - 3

Training Tape Leader

1	1	Push button 1
4	2	Push button 4
2	3	Push button 2
3	4	Push 3
1	5	Push 1

Listen for [ɑr]. You will hear two words. [ɑr] is at the end of the first word. You will press button 1 after you hear [ɑr].

1	6	ɑr	ɑm	Push button 1
1	7	ɔr	ɔm	Push 1
1	8	dɔr	dom	1
1	9	tʃɪr	tʃɪm	1
1	10	ɑr	ɑm	1
2	11			Push button 2

Listen for [ɑr]. You will hear two words. [ɑr] is at the end of the second word. You will press button 2 after you hear [ɑr].

2	12	ɑm	ɑr	Push button 2
2	13	om	or	Push 2
2	14	tom	tɔr	2
2	15	tʃɪm	tʃɪr	2
2	16	ɑm	ɑr	2
1	17			Push button 1

Listen for [ɑr]. You will hear two words. When [ɑr] is at the end of the second word, you will press button 2. When [ɑr] is at the end of the first word, you will press button 1.

1	18	ɑr	ɪp	Push 1
1	19	ɪr	ɪg	1
2	20	ɪm	ɑr	Push 2
2	21	ɑp	ʊr	2
2	22	ʊt	ʊr	2
1	23	ʊr	ʊdʒ	1
1	24	ɑr	ɪg	1
2	25	ɛn	ɛr	2
2	26	ɛp	ɔr	2
1	27	ɑr	um	1

Program

1	1	ɑr	um	
1	2	ɑr	ip	
1	3	ɔr	ek	
2	4	ɛθ	ɑr	
2	5	ɔs	ɪr	
1	6	ɔr	ʌn	
2	7	ɔɪt	ɛr	
1	8	ʊr	aɪʃ	
2	9	juf	ɪr	
1	10	ɔr	ʌdʒ	
1	11	fɔr	ɔb	
2	12	ɪnt	kɛr	
2	13	puv	hɪr	
2	14	gid	kɑr	
1	15	dɔr	mɪtʃ	
1	16	nɪr	sɪŋ	
1	17	ʃʊr	boθ	
1	18	hwɛr	ðoz	
2	19	bɔɪ	fɑr	
2	20	hænd	mɔr	
3	1			Push button 3
3	2			Push 3
3	3			3
3	4	ɑr	ɑr	Push 3
3	5	ɛr	ɛr	3
3	6	ɑr	ɛr	3
1	7	ɑr	um	1
2	8	ɑm	ɪr	2
3	9	ɔr	ɔr	3
3	10	ɔr	ɪr	3
2	11	aʊk	ɛr	2
1	12	ʊr	ɑg	1
3	13	ɔr	ʊr	3
3	14	ɑr	ɑr	3
3	15	ɛr	ɪr	3
3	21	ɑr	ɑr	
3	22	ɛr	ɛr	
2	23	aʊk	ɪr	
1	24	ɛr	ɑv	
2	25	ʌb	ɔr	
3	26	ɛr	ɑr	
3	27	ɔr	ɪr	
3	28	ɑr	ʊr	
1	29	ɛr	ɔɪð	
1	30	ɪr	æg	
2	31	aʊp	dɪr	
2	32	eʒ	ðɛr	
1	33	ɑr	suf	
2	34	pɑg	pur	
3	35	ɛr	ɔr	
3	36	fɛr	fɔr	
3	37	afɛr	flɔr	
1	38	ʃʊr	gɔn	
1	39	ɪr	ɛnd	
3	40	bɛr	stɑr	
4	1			Push button 4
4	2			Push 4
4	3			4
4	4	ɑm	ɑm	4
4	5	ib	ib	4
4	6	ɑm	ib	4
1	7	ɑr	um	1
3	8	ɛr	ɛr	3
2	9	ɪp	ɪr	2
4	10	ig	is	4
4	11	ɔb	ɪk	4
4	12	un	ɛtʃ	4
3	13	ɔr	ɑr	3
1	14	ʊr	ɛs	1
2	15	aɪf	ɪr	2
4	16	ɑm	ɑm	4
4	17	ɔb	ɔz	4
4	41	ɑm	ɑm	
4	42	ɔb	ɔb	
2	43	ʌt	ɔr	
4	44	jutʃ	aɪʒ	
3	45	ɑr	ɔr	
3	46	ɪr	ʊr	
1	47	ɛr	en	
3	48	ɔr	ʊr	
4	49	ɑθ	is	
4	50	ɛð	aʊʃ	
1	51	dɔr	ɔnɪ	
3	52	fɔr	fɑr	
2	53	sku	nɪr	
4	54	pet	dus	

4	55	ənkiv	gaʊz
4	56	hæpɪ	daʊn
2	57	pʊl	ðɛr
3	58	dɛr	pʊr
4	59	kes	kæn
1	60	bəfɔr	fɔl
2	61	tɛkə	pɛr
1	62	dɪr	lo
1	63	kɑr	de
1	64	fɪr	dije
2	65	fotwə	nɔr
3	66	fɑr	nɛr
3	67	hɪr	dɔr
3	68	mɔr	dʒɑr
2	69	tʃewə	ʃɪr
4	70	tʃaɪld	hɛlp
1	71	bɑr	maɪl
1	72	tɪr	əwe
2	73	bɔl	tʃɛr
2	74	dʒuji	stɔr
2	75	vəɪjə	fɪgjʊr
2	76	zol	tɔr
4	77	sɪtɪ	kʌm
1	78	tʃɑr	fju
4	79	ɛnɪ	hold
1	80	kɛr	kuwe
2	81	bul	ʃɛr
3	82	mɔr	tɑr
4	83	bɔl	bəgæn
1	84	əpɪr	əpɑjə
2	85	tiwə	klɪr
1	86	siʃɔr	ʃɔl
1	87	pripɛr	bipɛwə
2	83	gɪwə	gɪr
4	89	kol	kowə
3	90	fɑr	fɪr

[r] I - 4

Training Tape Leader

1	1	Push button 1
4	2	Push button 4
2	3	Push button 2
3	4	Push 3
1	5	Push 1

Listen for [rə]. You will hear two words. [rə] is in the middle of the first word. You will press button 1 after you hear [rə].

1	6	arə	ama	Push button 1
1	7	oro	omo	Push 1
1	8	aru	amu	1
1	9	ari	amp	1
1	10	era	ema	1
2	11			Push button 2

Listen for [rə]. You will hear two words. [rə] is in the middle of the second word. You will press button 2 after you hear [rə].

2	12	ama	ara	Push button 2
2	13	omo	oro	Push 2
2	14	amu	aru	2
2	15	amp	ari	2
2	16	ema	era	2
1	17			Push button 1

Listen for [rə]. You will hear two words. When [rə] is in the middle of the second word, you will press button 2. When [rə] is in the middle of the first word, you will press button 1.

1	18	ara	amu	Push 1
1	19	ara	umə	1
2	20	ɛmə	aru	Push 2
2	21	ɪpe	urə	2
1	22	ɪre	ʌba	1
2	23	ʌmʌ	ɛri	2
2	24	una	ɔra	2
1	25	ɔri	upə	1
1	26	ʊri	ɛpɛ	1
2	27	æmɛ	ɪrɔ	2
1	28	ara	ɛgə	1

Program

1	1	ara	uma
1	2	arə	inə
1	3	uru	ɛtu
2	4	ɛkt	ard
2	5	ɔpe	ɪru
1	6	ira	ʌʃi
2	7	ɛkɔɪ	ɔre
1	8	aɪrʌ	ʌdʒi
2	9	jusɛ	oræ
1	10	ɔro	æmu
1	11	armi	isɔ
2	12	opɔɪ	əraɪv
2	13	æki	vɛri
2	14	obez	əroz
1	15	hard	hɛd
1	16	ərum	əbʌv

1	17	əraʊnd	opən	
1	18	əraɪv	ivən	
2	19	hoz	hɔrs	
2	20	səpoz	əraɪz	
3	1			Push button 3
3	2			Push 3
3	3			3
3	4	ɑrɑ	ɑrɑ	Push 3
3	5	ɑrɑ	ɑro	3
2	6	ɑmə	ɑrɑ	2
1	7	ɛri	ɑnə	1
3	8	bri	bri	Push 3
3	9	frʌ	frɑ	3
3	10	trɛ	frɛ	3
1	11	trɑ	smɑ	1
2	12	slɛ	pro	2
3	13	ɛrə	ɪro	3
3	14	ɑrɑ	ɑrɑ	3
3	21	ɑrɑ	ɑrɑ	
3	22	grɑ	gri	
2	23	ɛmɪ	ɛraʊ	
1	24	frɛ	smɑ	
2	25	plo	tro	
3	26	ɔrs	ɔrt	
3	27	ogrɔ	ekri	
3	28	grɑ	krʊ	
1	29	tre	plɔɪ	
1	30	træ	sti	
2	31	blɔ	θri	
2	32	flʌ	gre	
1	33	fraɪ	sko	
2	34	spɛ	tri	
3	35	frɛʃ	frɛʃ	
3	36	prɛs	prɪns	
3	37	hɑrd	hɑrt	
1	38	græs	plæn	
1	39	pruv	lʌv	
3	40	ɑrm	fɑrm	
4	1			Push button 4
4	2			Push 4
4	3			4
4	4	ɑmɑ	ɑmɑ	4
4	5	ɑmɑ	ɑpɑ	4
1	6	ɑrɑ	ɑpu	1
3	7	ɔre	ɪru	3
4	8	smɑ	smo	4
2	9	fe	fraʊ	2
4	10	sli	flo	4
4	11	stɑ	smɑ	4
3	12	bro	pro	3
2	13	ɛbə	ɪro	2
1	14	ɔrt	est	1
4	15	smɑ	spi	4
4	16	ɑmɑ	ɑmɑ	4
4	41	ɑmɑ	ɑmɑ	
4	42	smɑ	smɔ	
2	43	smʊ	graɪ	
4	44	flaʊ	blɔ	
3	45	præ	pro	
3	46	bri	gru	
1	47	ɛrt	ɔlt	
3	48	ɔrm	ʊrp	
4	49	klɑ	gli	
4	50	ɛltʃ	aʊwo	
1	51	drɛs	swo	
3	52	brɛd	brum	
2	53	fɔl	frʌm	
4	54	klig	glep	
4	55	smuð	flem	
4	56	gɪlt	daʊn	
2	57	glæs	brɪŋ	
3	58	brɛd	brek	
4	59	fɛlt	mɪst	
1	60	kɔrt	kɔɪn	
2	61	ʃig	ʃɔrt	
1	62	trɪp	tɔl	
1	63	drɪp	fɪl	
1	64	briz	swot	
2	65	blef	træf	
3	66	əraɪv	əkrɔs	
3	67	lɑrdʒ	lɑrd	
3	68	krim	skrim	
2	69	spomz	pɑrt	
4	70	nʌθɪŋ	kwɪts	
1	71	strit	stim	
1	72	drɑp	plez	
2	73	flaɪɪŋ	frɛnd	
2	74	pɪlo	pɑrti	
2	75	spokɪ	sprɪŋ	
2	76	swɛb	strɪŋ	
4	77	səplaɪ	wɪθ	
1	78	θrot	θɔt	
4	79	pipəl	plen	
1	80	kraʊd	smɔld	
2	81	splik	kraɪd	
3	82	vɛri	mɛri	
4	83	haʊs	maʊθ	
1	84	prɪti	hold	
2	85	plaʊm	braʊn	
1	86	ɛvri	ɔvlo	
1	87	θri	faɪv	
2	88	blɛd	drɪŋk	
4	89	bəliv	bətwin	
3	90	grin	gɑrdən	

[r] I - 5

Training Tape Leader

1	1		Push button 1
4	2		Push button 4
2	3		Push button 2
3	4		Push 3
1	5		Push 1

Listen for [r:ə]. You will hear one word. [r:ə] is at the beginning of the word. You will press button 1 after you hear [r:ə].

1	6	r:ə	Push button 1
1	7	rɑ	Push 1
1	8	rɑp	1
1	9	rup	1
3	10		Push button 3

Listen for [ɑr:]. You will hear one word. [ɑr:] is at the end of the word. You will press button 3 after you hear [ɑr:].

3	11	ɑr:	Push button 3
3	12	sɑr	Push 3
3	13	tɑr	3
3	14	tɛr	3
2	15		Push button 2

Listen for [r:ə]. You will hear one word. [r:ə] is in the middle of the word. You will press button 2 after you hear [r:ə].

2	16	ɑˈr:ə	Push button 2
2	17	ɑˈri	Push 2
2	18	ɑˈru	2
2	19	pɛrɪ	2
1	20		Push button 1

You will hear one word. Listen for [r:ə]. When [ɑr] is at the end, you will press button 3. When [r:ə] is in the middle, you will press button 2. When [r:ə] is at the beginning, you will press button 1.

1	21	rɑg	Push 1
2	22	ɑˈri	Push 2
3	23	sɑr	Push 3
3	24	ʃɛr	3
1	25	rɑp	1
2	26	uˈro	2
1	27	rup	1
3	28	bɪr	3
2	29	trʌ	2
2	30	prʌ	2
3	31	ɔr	3
1	32	rɑ	1

Program

1	1	rɑ	
2	2	ɑˈre	
3	3	ɑr	
3	4	ɛr	
1	5	re	
2	6	əru	
1	7	rɑ	
3	8	ɔr	
2	9	irə	
2	10	ɔri	
3	11	dɔr	
2	12	kɛri	
2	13	kri	
1	14	rɑn	
2	15	trɑn	
1	16	rid	
3	17	fɑr	
1	18	rɛd	
1	19	rug	
3	20	fɪr	
2	21	frɛnd	
3	22	ʃʊr	
1	23	rum	
3	24	kɑr	
1	25	rɛst	
1	26	ritʃ	
2	27	mɛri	
3	28	pɛr	
2	29	prɑɪs	
3	30	hɪr	
4	1		Push button 4
4	2		Push 4
4	3		4
4	4	mɑp	4
4	5	ɑɪs	4
4	6	ɑse	4
4	31	isɑ	
4	32	ʃɑ	
4	33	ɑm	
3	34	vɛr	
1	35	ruk	
2	36	pruv	

4	37	fid
3	38	dʊr
4	39	spaʊ
2	40	krɔs
1	41	raʊnd
1	42	rɑk
3	43	ʃɔr
4	44	sun
2	45	frʌm
4	46	hɛd
1	47	raɪt
2	48	mɔrnɪŋ
3	49	tɪr
2	50	kraɪ
2	51	tri
3	52	pʊr
1	53	ren
4	54	es
3	55	dɪr
3	56	bɑr
3	57	bəfɔr
4	58	fɪlɪŋ
2	59	ʃɛrɪŋ
1	60	rʌʃ
2	61	drɛs
4	62	jɛs
3	63	dʒɑr
1	64	rizən
1	65	rɔŋ
4	66	hol
3	67	jʊr
1	68	rɛdɪ
4	69	wɪndo
2	70	dʊrɪŋ
1	71	raɪz
4	72	laɪt
3	73	klɪr
4	74	taɪd
3	75	stɑr
2	76	grin
3	77	mɔr
4	78	wɪtʃ
2	79	frɛʃ
1	80	rilɪ
2	81	sprɪŋ
1	82	rɪŋɪŋ
4	83	jʌŋ
4	84	əwe
2	85	brokən
4	86	bwaʊn
1	87	rimen
4	88	twuθ
1	89	rul
4	90	jɔk

[r] I - 6

Training Tape Leader

1	1	Push button 1
4	2	Push button 4
2	3	Push button 2
3	4	Push 3
1	5	Push 1

Listen for [rə]. You will hear one word. There is one [rə] in the word. You will press button 1 when you hear one [rə] in the word.

1	6	r:ə	Push 1
1	7	ɑr	Push 1
1	8	ɑrə	Push 1
1	9	ropɪ	1
1	10	trok	1
1	11	spɪr	1
3	12		Push button 3

Listen for [r:ə]. You will hear one word. There is more than one [r:ə] in the word. You will press button 3 when you hear two [rə] in the word.

3	13	rəˈro	Push 3
3	14	ˈrorə	Push 3
3	15	prorɪ	Push 3
3	16	krekrə	3
3	17	ripɑrd	3
3	18	raɪpɛr	3
4	19		Push button 4

Now you will hear one word, but [rə] is not in the word. You will not hear [rə]. After you hear the word, you will press button 4.

4	20	po	Push 4
4	21	pɑt	Push 4
4	22	spem	4
4	23	mɑst	4
1	24		Push button 1

You will hear one word. Listen for [rə]. When there is no [rə], you will press button 4. When there is more than one [rə], you will press button 3. When there is one [rə], you will press button 1.

1	25	r:ə	Push 1
1	26	ɑr	1
3	27	rəˈro	Push 3
3	28	ˈrorə	3
4	29	po	Push 4
4	30	pɑt	4
1	31	ɑrə	1
1	32	ropɪ	1
4	33	spem	4
3	34	prorɪ	3
1	35	trok	1
1	36	spɔr	1
1	37	gɛrəp	1
3	38	ripɑrd	3
4	39	mɑst	4
1	40	rid	1

Program

1	1	rid
1	2	tri
1	3	mɔr
3	4	rɔr
4	5	titʃ
3	6	rendɪr
1	7	tren
4	8	es
1	9	raɪz
1	10	hɪr
4	11	gev
1	12	kɑr
1	13	durɪŋ
1	14	brɪŋ
1	15	rum
3	16	relrod
1	17	fɛr
1	18	frɛʃ
4	19	ɪtʃ
3	20	rikɔrd
1	21	rɛd
1	22	tʃɛr
4	23	fɛl
3	24	pripɛr
1	25	raɪt
4	26	jaɪt
1	27	drɪŋk
1	28	nɪr
1	29	rɛst
4	30	wɛst
3	31	braʊn bɛr
4	32	flaɪ
1	33	ʃʊr
1	34	θru
4	35	θwe
1	36	fɑr
3	37	ðɛrfɔr
1	38	rizən
1	39	ræbɪt
3	40	grin dɔr
4	41	dwɪŋk
1	42	rilɪ
1	43	jɪr
1	44	dʒɑr
1	45	rɪŋɪŋ

[r] I - 7

Training Tape Leader

1	1		Push button 1
4	2		Push button 4
2	3		Push button 2
3	4		Push 3
1	5		Push 1

Listen for [r:ə]. You will hear two words. When the first word has a good [r:ə], you will press button 1. When the second word has a good [r:ə], you will press button 2.

1	6	raɪt	no	Push 1
2	7	no	raɪt	Push 2
2	8	nu	fɔr	2
1	9	dɔr	taʊn	1
2	10	gɔn	fri	2
1	11	gret	sɔŋ	1
3	12			Push button 3

Listen for [r:ə]. You will hear two words. When both words have a good [r:ə], you will press button 3. When neither word has a good [r:ə], you will press button 4.

3	13	raɪt	raɪt	Push 3
3	14	rut	raɪt	3
4	15	no	nʌn	4
4	16	ne	nɑt	4
3	17	ɔr	fɔr	3
3	18	krim	kret	3
1	19			Push button 1

Listen for [r:ə]. You will hear two words. When [r:ə] is in the first word, you will press button 1. When [r:ə] is in the second word, you will press button 2. When [r:ə] is in both words, you will press button 3. When [r:ə] is in neither word, you will press button 4.

1	20	raɪt	no	Push 1
2	21	no	raɪt	2
3	22	raɪt	raɪt	3
4	23	no	nʌn	4
3	24	ɛr	kɛr	3
4	25	ne	nɑt	4
2	26	hɪm	hɪr	2
1	27	tren	sen	1
1	28	krip	kip	1
2	29	ʃʊd	ʃʊr	2
4	30	pæn	tæn	4
3	31	rɪŋ	rɪŋ	3
1	32	ræn	sæn	1

Program

1	1	ræn	sæn
2	2	fɔt	fɔr
3	3	gret	gret
4	4	tuθ	tuθ
1	5	raɪd	baɪd
3	6	roz	roz
4	7	ʃuz	ʃuz
2	8	bʌʃ	rʌʃ
1	9	rɪŋ	θɪŋ
1	10	hɪr	him
2	11	kɑt	kɑr
1	12	dɔr	dol
2	13	nɪp	nɪr
2	14	kæn	ræn
2	15	pɪtʃ	rɪtʃ
1	16	fraɪ	flaɪ
1	17	res	tʃes
2	18	ʃʊk	ʒʊr
1	19	brum	blum
2	20	ədaɪv	əraɪv
2	21	kɛtʃi	kɛri
2	22	pun	prun
3	23	rɑk	rɑk
3	24	fɑr	fɑr
2	25	fil	ril
2	26	mowə	mɔr
2	27	dɪd	dɪr
1	28	prez	plez
4	29	əwe	əwe
1	30	ðɛr	ðɛn
1	31	frɛʃ	fwɛʃ
2	32	pʊt	pʊr
2	33	tɛd	rɛd
1	34	fɛr	fɛtʃ
2	35	stɑp	stɑr
3	36	dɔr	dɔrz
2	37	wez	rez
2	38	sɔŋ	rɔŋ
1	39	nɪr	nɪb
3	40	fɔrt	fɔr
2	41	əjaɪv	əraɪv
1	42	stɑr	stɑwə
1	43	klɪr	klɪf
4	44	ɔɪli	ɔɪli
1	45	rɔŋ	lɔŋ
1	46	ʃʊr	ʃʊd
1	47	rustɚ	justɚ
2	48	dop	rop
1	49	kɛr	kɛn
2	50	waʊnd	raʊnd
2	51	stwit	strit
2	52	fʌm	frʌm
1	53	rɛst	wɛst
1	54	briz	bliz
4	55	gɪwə	gɪwə
2	56	əklɔs	əkrɔs
2	57	pɛt	pɛr
2	58	fɛni	fɛri
1	59	fɔrs	fojəs
2	60	dɛɑb	dgɑr
1	61	ræbɪt	wæbɪt
1	62	fɪr	fɪjə
1	63	rʌŋ	jʌŋ
4	64	kɔl	kɔl
1	65	mɔr	mov
4	66	jɪst	wɪst
2	67	stwaɪp	straɪp
3	68	rɪp	raɪp
2	69	waɪp	raɪp
1	70	tri	təji
1	71	mɛri	mɛni
1	72	lɑrdʒ	lɑwədʒ
3	73	ʃɛrɪŋ	ʃɛrɪŋ
1	74	fɑr	fɑl
2	75	hwɛn	hwɛr
1	76	rɛst	wɛst
2	77	juθ	ruθ
3	78	əraɪz	əraʊnd
1	79	əraɪv	əjaɪv
4	80	flowə	flowə
4	81	bɛji	bɛwi
1	82	brɪŋ	bwɪŋ
2	83	gɑwədən	gɑrdən
1	84	sɑri	sɑwi
1	85	rɛd	wɛd

2	86	wil	ril
2	87	tʃɛwə	tʃɛr
2	88	bɔt	brɔt
2	89	gwet	gret
1	90	rɪtʃ	wɪtʃ

[r] II - 1

1	ma
2	nɛ
3	dɔ
4	ra
5	sa
6	ra
7	nu
8	ru
9	ri
10	aɪm
11	aɪn
12	ab
13	ar
14	ɔr
15	ɛk
16	ɛr
17	un
18	ɪr
19	ʃaʊ
20	raʊ
21	ti
22	rɛ
23	ɛmɛ
24	ana
25	ava
26	ara
27	odo
28	ɔro
29	ɛre
30	unu
31	aru
32	ugo
33	aʊn
34	ɪr
35	ɪd
36	ar
37	jæ
38	ra
39	rʌ
40	ɛwe
41	ɛrɔɪ
42	ɔri
43	aɪl
44	ʊr
45	rɛ

46	ɪʃ
47	ɪrɔ
48	ɛr
49	ʊre
50	ræ

[r] II - 2

1	ma
2	nɛ
3	dɔ
4	ra
5	tɔɪ
6	ro
7	nu
8	ri
9	rid
10	ʃu
11	ru
12	rum
13	de
14	rɛ
15	rɛd
16	am
17	un
18	id
19	ɛr
20	on
21	ɪr
22	ɔf
23	ɔr
24	dɔr
25	fæt
26	far
27	kar
28	ðæt
29	ðɛr
30	ʃɛr
31	tʃɛr
32	il
33	ril
34	itʃ
35	ritʃ
36	ama
37	unu
38	ɛdi
39	ara
40	rɛd
41	brɛd
42	ti
43	tri
44	triz
45	fed

46 fred
47 pez
48 prez
49 taɪ
50 traɪ
51 traɪd
52 wi
53 wɪr
54 hɪr
55 taʊn
56 raʊn
57 raʊnd
58 kaɪt
59 kraɪ
60 stɑr
61 stɑrt
62 stɑrts
63 jɛs
64 lʌv
65 rɛd
66 rɛdi
67 rum
68 nun
69 ɔr
70 fɔr
71 hɔrs
72 wɜk
73 rod
74 dɪr
75 dɪrz
76 tor
77 stɔr
78 stɔri
79 stɔrz
80 raɪt

[r] II - 3

1 mɑ
2 lɑ
3 rɑ
4 ri
5 nɔɪ
6 rɔɪ
7 nu
8 ru
9 raɪ
10 ɑl
11 ɑr
12 ɪr
13 ɛd
14 ɛr
15 od
16 ɔr
17 fɔr
18 rid
19 ritʃ
20 ɑlɑ
21 ɑra
22 ɑri
23 sɑri
24 sɛd
25 ɛri
26 vɛri
27 fɛr
28 ðe
29 ðɛr
30 ðɛrz
31 aɪd
32 raɪd
33 laɪt
34 raɪt
35 ɔl
36 bɔl
37 ɑrm
38 fɑrm
39 fid
40 fɪr
41 rɛd
42 rɛdi
43 ɑlrɛdi
44 raɪ
45 traɪ
46 traɪd
47 ɛr
48 tɛr
49 stɛr
50 stɛrz
51 re
52 ren
53 tren
54 stren
55 ɔr
56 fɔr
57 fɔrk
58 rut
59 frut
60 raʊnd
61 əraʊnd
62 braʊn
63 ril
64 rid
65 ritʃ
66 ɪr
67 hɪr
68 jɪr

69 ɛr
70 hwɛr
71 wɛr
72 wɛrz
73 ɑr
74 pɑrt
75 pɑrti
76 rʌn
77 ræn
78 raɪt
79 raɪtɚ
80 ɑlraɪt

[r] II - 4

1 rɑ
2 ræ
3 ræn
4 ræntʃ
5 ɛr
6 ɑr
7 tɑr
8 stɑr
9 stɑrt
10 ɛri
11 ʃɛri
12 ʃɛrɪŋ
13 rɑ
14 rɑk
15 rɑks
16 ɔri
17 fri
18 friz
19 ɛr
20 tɛr
21 stɛr
22 stɛrɪŋ
23 raʊn
24 raʊnd
25 əraʊnd
26 mɑr
27 mɑro
28 təmɑro
29 ren
30 reni
31 reni de
32 raɪ
33 raɪt
34 raɪt naʊ
35 ɔr
36 fɔr
37 fɔr mi
38 ɛr
39 vɛr
40 vɛri
41 vɛri gʊd
42 ɪr
43 nɪr
44 nɪrʌs
45 rim
46 krim
47 aɪs krim
48 aɪs krim kon
49 rum
50 brum
51 ðə brum
52 ðə bɪg brum
53 rit
54 trit
55 strit
56 strit saɪn
57 draɪv
58 draɨvɚ
59 ðə draɪvɚ
60 ðə fæst draɪvɚ
61 raɪs
62 praɪs
63 praɪst
64 haɪ praɪst
65 mɑr
66 mɑrk
67 mɑrk ɪt
68 mɑrk ɪt daʊn
69 rɛd
70 rɛdi
71 gɛt rɛdi
72 ɪr ɝ
73 hɪr hɝ
74 ɪts hɪr
75 ʃʊr
76 aɪm ʃʊr
77 aɪm ʃʊr naʊ
78 ru
79 θru
80 ɑl θru

[r] II - 5

1 rɛ
2 rɛd
3 rɛdi
4 ɑr
5 ɔr
6 fɔr
7 fri
8 praɪ
9 praɪs
10 pɑrt

11 raɪ
12 raɪt
13 raɪt naʊ
14 ɔr
15 fɔr
16 fɔr mi
17 traɪ
18 traɪd
19 aɪ traɪd
20 rod
21 ðə rod
22 ʌp ðə rod
23 hɪr
24 hiz hɪr
25 hiz hɪr naʊ
26 kɛri
27 kɛri ðɪs
28 aɪl kɛri ðɪs
29 kɑr
30 ðə kɑr
31 ðə nu kɑr
32 rɛdi
33 ʃiz rɛdi
34 ʃiz rɛdi tə go
35 drɛs
36 ðə drɛs
37 ðə blu drɛs
38 frɛnd
39 maɪ frɛnd
40 maɪ bɛst frɛnd
41 hɔrs
42 ðə hɔrs
43 ðə hɔrs ræn
44 ðə hɔrs ræn fæst
45 res
46 ðə res
47 rʌn ðə res
48 ju rʌn ðə res
49 tri
50 ðə tri
51 ðə grin tri
52 ðɛr
53 ovɚ ðɛr
54 ɪts ovɚ ðɛr
55 strit
56 ðə strit
57 krɔs ðə strit
58 krɔs ðə strit naʊ
59 rɛst
60 lɛts rɛst
61 lɛts rɛst naʊ
62 lɛts rɛst raɪt naʊ
63 stɑr
64 ðæt stɑr
65 ðæt braɪt stɑr
66 si ðæt braɪt stɑr
67 pʊr
68 hiz pʊr
69 hiz vɛri pʊr
70 prɪti
71 ʃiz prɪti
72 ʃiz rili prɪti
73 tʃɛr
74 ðə tʃɛr
75 ðə gre tʃɛr
76 gɛt ðə gre tʃɛr
77 nɪr
78 ɪts nɪr
79 ðæts fɑr
80 ðæts fɑr əwe

[r] II - 6

1 ræn
2 hi ræn
3 hi ræn fæst
4 ɑr
5 ðe ɑr
6 ðɛr ðe ɑr
7 tri
8 ðə tri
9 ðə tri ɪz bɪg
10 res
11 aɪl res
12 aɪl res ju
13 aɪl res ju nɛkst
14 pɔr
15 pɔrɪŋ
16 pɔrɪŋ ren
17 ɪts pɔrɪŋ ren
18 rɛst
19 ðə rɛst
20 ðə rɛst ræn
21 ðə rum
22 tu ðə rum
23 go tu ðə rum
24 go tu ðɛr rum
25 raɪt
26 se ɪt raɪt
27 se ɪt raɪt ɛvri taɪm
28 traɪ
29 traɪ wʌns
30 traɪ wʌns mɔr
31 relrod
32 ðə relrod træk
33 əkrɔs tə relrod træk
34 frɛnd
35 hɪz frɛnd

36 hiz frɛndli
37 ʃiz vɛri frɛndli
38 drɛs
39 maɪ drɛs
40 maɪ rɛd drɛs
41 ɪts ə prɪti drɛs
42 ðə kɑr
43 ðə kɑr rʌnz
44 ðə kɑr rʌnz fæst
45 ɪts ə braʊn kɑr
46 əkrɔs
47 lɛts go əkrɔs
48 lɛts go əkrɔs ðə strit
49 lɛts go əkrɔs raɪt naʊ
50 ə stɑr
51 ə braɪt stɑr
52 ðɛrz ə braɪt stɑr
53 ðə stɑr ɪz fɑr əwe
54 tʃɛr
55 ðə tʃɛr ɪz grin
56 ðə tʃɛr ɪz brokən
57 ðɪs ɪz ə gre tʃɛr
58 rɛdi
59 ɑr ju rɛdi
60 wɪr rɛdi tu stɑrt
61 ðə dɔr
62 ðə dɔr ɪz opən
63 ðə skrin dɔr ɪz opən
64 dɪd ju hɪr ðə dɔr bæŋ
65 ðə hɔrs
66 raɪd ðə hɔrs
67 hi rod ðə hɔrs
68 ðə hɔrs θru hɪm ɔf
69 dont fɜgɛt
70 dont fɔrgɛt ɛvriθɪŋ
71 ju fɔrgɑt jʊr bʊk
72 traɪ tu rimɛmbɚ
73 ə stɔri
74 rid ʌs ə stɔri
75 rid ʌs ə skɛri wʌn
76 wɪr nɑt əfred
77 ovɚ hɪr
78 brɪŋ ɪt ovɚ hɪr
79 dont drɑp ɪt ɔn ðə flɔr
80 ɪtəl brek ɪf ju drɑp ɪt

[r] II - 7

1 gɛt rɛdi
2 gɛt rɛdi tə stɑrt
3 ɑr ju rɛdi naʊ
4 wiv ɔlrɛdi stɑrtɪd
5 wiv dʌn ðə fɔrθ wʌn
6 wɪr goɪŋ tə du mɔr
7 wil du lɑts bəfɔr wɪr θru
8 gɛt ə tʃɛr
9 hɜi n̩ gɛt ə tʃɛr
10 jul hæv tə gɛt ɪt jʊrsɛlf
11 ðɛrz wʌn ɪn ðæt rum
12 ɪts ə braɪt rɛd tʃɛr
13 nʌn əv ðə tʃɛrz mætʃ
14 aɪ hæv ə grin tʃɛr
15 ʃi hæz ə braʊn tʃɛr
16 ænd ju hæv ðə rɛd wʌn
17 muv ðə tʃɛrz əraʊnd ðə dɛsk
18 naʊ wi kən rid
19 wi kən rid θri stɔriz
20 wil tek tɜnz ridɪŋ stɔriz
21 aɪl rid ə hɔrs stɔri
22 ju kən rid ə fʌni stɔri
23 ðɛn ʃil rid ə skɛri wʌn
24 mek ɪt ə rili skɛri stɔri
25 wi laɪk tə hɪr skɛri wʌnz
26 wɪr nɑt əfred əv ðəm
27 ɪts fɔr əklɑk
28 wi go aʊtsaɪd æt fɔr
29 ɛvribədi ɛls ɪz aʊt ðɛr
30 lɛts rʊn ə res
31 aɪ dɛr ju tə res mi
32 aɪl res ju tu ðə triz
33 ðæts nɑt tu fɑr tə rʌn
34 ɔn jʊr mɑrk gɛt sɛt go
35 ju ʃʊr du rʌn fæst
36 lɛts res ovɚ tə ðoz rɑks
37 no lɛts rɛst ɪn ðə græs
38 du ju hɪr ðə tren
39 aɪ kæn hɪr ɪt frʌm hɪr
40 haʊ fɑr ɪz ðə relrod træk
41 ɪts nɑt vɛri fɑr əwe
42 ɪts dʒʌst əkrɔs ðə strit
43 aɪ kænt hɪr ðə tren ðo
44 ɪf jul traɪ ju kæn hɪr ɪt
45 hwɛr ɑr ðe goɪŋ
46 ðɛr nɑt goɪŋ ɛnihwɛr
47 ðɛr kʌmɪŋ bæk frʌm taʊn
48 ðe rod ɪn tə ðə stɔr
49 hiz kɛriɪŋ ə nu pɛr əv ʃuz
50 ʃiz gɑt ə brænd nu drɛs
51 ɪzn̩t ɪt ə prɪti blu drɛs
52 hwɛr ɪz ʃi goɪŋ tə wɛr ɪt
53 ʃil wɛr ɪt tə ðə pɑrti
54 aɪ nɪrli fɔrgɑt əbaʊt ðæt
55 ju fɔrgɛt ɔlmost ɛvriθɪŋ
56 aɪ rimɛmbɚd tə gɛt ə prɛzənt
57 gʊd fɔr ju hwɑt ɪz ɪt
58 ɪts ə bɪg rɛd faɪɚ trʌk
59 ðæts ə gret prɛzənt

60 ɪts dʒʌst raɪt fɔr hɪm
61 ɪts stɑrtɪŋ tu ren
62 kwɪk rʌn fɵr ðə pɔrtʃ
63 ðə graʊnd wʌz gɛtɪŋ hard ɛniwe
64 wil ste ɪn ðɛr dʊrɪŋ ðə stɔrm
65 ðə ren ɪz pɔrɪŋ daʊn
66 ɪts pɔrɪŋ ʌndɚ ðə dɔr tu
67 ðə flɔrz æz wɛt æz ðə jɑrd
68 brɪn ə taʊəl ən sprɛd ɪt aʊt
69 sprɛd ɪt aʊt ovɚ ðɛr
70 ɪt ʃʊd klɪr ʌp prɪti sun
71 aɪ hɪr sʌmwʌm kraɪɪŋ
72 ðɛrz ðə gɝl huz kraɪɪŋ
73 hɝ frɛndz ɑr wɪθ hɝ
74 ʃi kraɪz bɪg tɪrz dʌzn̩t ʃi
75 ʃi drɑpt hɝ dɑl hwɛn ʃi ræn
76 hɝ fevrɪt dɑl ɪz brokən
77 sʌmwʌm wɪl ʃɛr ðɛrz wɪθ hɝ
78 ɪts klɪrd ʌp si ðə stɑrz
79 ðə ren hæz stɑpt fɔr gʊd
80 wɪr ɔl θru wɪθ ðɪs tu

[1] BTT - 2

Listen for [lə]. You will hear one word. After you hear [l:ə], you will press button 1.

1	1	l:ə	Push button 1
1	2	lʌ	Push 1
1	3	ʌl:	Push 1
1	4	ɑl	Push 1
1	5	lʌ	1
1	6	ɑl	1
1	7	il	1
1	8	lɑ	1
4	9		Push button 4

Now, you will hear one word, but [l:ə] is not in the word. You will not hear [lə]. After you hear the word, you will press button 4.

4	10	m:ʌ	Push button 4
4	11	mʌ	Push 4
4	12	ʌm:	Push 4
4	13	ʌm	Push 4
4	14	dʒʌ	4
4	15	ʌdʒ	4
4	16	gɛ	4
4	17	ɔg	4
1	18		Push button 1

Listen for [l:ə]. You will hear one word. If you don't hear [l:ə], you will press button 4. When you hear [l:ə], you will press button 1.

1	19	l:ə	Push 1
1	20	lʌ	1
1	21	ɑl	1
4	22	ɑm	Push 4
4	23	mɑ	4
4	24	mʌ	4
1	25	lɔ	1
1	26	ol	1
4	27	nɑ	4
1	28	il	1
4	29	udʒ	4
4	30	un	4
1	31	lɛ	1
4	32	in	4
1	33	lɑ	1

[1] I - 1
Training Tape Leader

1	1		Push button 1
4	2		Push button 4
2	3		Push button 2
3	4		Push 3
1	5		Push 1

Listen for [l:ə]. You will hear one word. [l:ə] is in the word. You will press button 1 after you hear the word.

1	6	l:ə	Push button 1
1	7	lɑ	Push 1
1	8	lu	1
1	9	ɑl	1
1	10	ɔl	1
1	11	il	1
4	12		Push button 4

Now, you will hear one word, but [l:ə] is not in the word. You will not hear [l:ə]. You will press button 4 after you hear the word.

4	13	m:ʌ	Push button 4
4	14	mɑ	Push 4
4	15	ɑm	4
4	16	gɛ	4
4	17	sɔ	4
4	18	ɑdʒ	4
1	19		Push button 1

Listen for [l:ə]. You will hear one word. When [l:ə] is not in the word, you will press button 4. When [l:ə] is in the word, you will press button 1.

1	20	lɑ	Push 1
1	21	ɑl	1
4	22	mɑ	Push 4
4	23	ɑm	4
1	24	il	1
4	25	ig	4
4	26	gɛ	4
1	27	lɛ	1
4	28	ɑdʒ	4
1	29	ɔl	1
1	30	lɑ	1

Program

1	1	lɑ

4	2	mɑ
1	3	lɑ
4	4	gi
4	5	te
1	6	lu
4	7	sɑ
1	8	li
4	9	ʃɔ
1	10	li
4	11	ko
4	12	mju
1	13	lɔ
4	14	zɪ
4	15	fu
4	16	paʊ
1	17	le
4	18	tʃɑ
1	19	lu
1	20	lɔ
4	21	dʒɛ
4	22	dɔ
1	23	laɪ
1	24	lɛ
4	25	vɔɪ
1	26	lɪ
1	27	lo
4	28	wɛ
1	29	laʊ
4	30	ji
1	31	ɑl
1	32	ɑl
4	33	ɑk
1	34	ɛl
4	35	ʊt
1	36	ol
4	37	oʒ
4	38	ip
1	39	gl
4	40	aɪb
1	41	ɔɪl
4	42	ɛm
1	43	ɛl
1	44	ɔl
1	45	æl
1	46	ɔl
4	47	ʌd
1	48	ɪl
1	49	jul
4	50	iθ
4	51	ʊʃ
4	52	ɔɪk
1	53	ɛl
4	54	edʒ
4	55	up
4	56	ɑt
4	57	ut
1	58	æl
1	59	ɪl
1	60	ɜl
1	61	lɑ
1	62	ɑl
4	63	wi
4	64	jum
1	65	læ
4	66	dæ
1	67	ʊl
1	68	lu
1	69	ɪl
4	70	ov
4	71	jaɪ
1	72	ɔl
1	73	ɪl
4	74	aɪʒ
4	75	ɔg
4	76	ræ
1	77	ʌl
4	78	ɑʃ
4	79	fu
4	80	te
4	81	bɛ
1	82	ɑl
4	83	ʊrθ
4	84	rʌ
1	85	aʊl
1	86	lɔ
4	87	aɪd
1	88	lɑr
1	89	li
1	90	lʌ

[1] I - 2

Training Tape Leader

1	1			Push button 1
4	2			Push button 4
2	3			Push button 2
3	4			Push 3
1	5			Push 1

Listen for [lːə]. You will hear two words. [lːə] is at the beginning of the first word. You will press button 1 after you hear [lːə].

1	6	lːə	mʌ	Push button 1
1	7	lɑ	mɑ	Push 1
1	8	lɑn	mɑn	1

1	9	lig	mig	1
1	10	lɑ	pɛ	1
1	11	lu	nɛ	1
1	12	lɑ	mu	1
2	13			Push button 2

Listen for [l:ə]. You will hear two words. [l:ə] is at the beginning of the second word. You will press button 2 after you hear [l:ə].

2	14	mʌ	l:ə	Push button 2
2	15	mɑ	lɑ	Push 2
2	16	mɑn	lɑn	2
2	17	mig	lig	2
2	18	pɛ	lɑ	2
2	19	nɛ	lu	2
2	20	mu	lɑ	2
1	21			Push button 1

Listen for [l:ə]. You will hear two words. When [l:ə] is at the beginning of the second word, you will press button 2. When [l:ə] is at the beginning of the first word, you will press button 1.

1	22	lə	pi	Push 1
1	23	lɛ	gɪ	1
2	24	mɪ	lɛ	Push 2
2	25	nɪ	lu	2
2	26	dʒɪ	lɑ	2
2	27	dʒɑ	lɛ	2
1	28	lu	pɛ	1
1	29	lɑ	nɛ	1
1	30	lu	gɔ	1
2	31	nɪ	lɑ	2
1	32	lɑ	mu	1

Program

1	1	lɑ	mu	
1	2	lɑ	gi	
1	3	lu	tɛ	
2	4	pɛ	lɑ	
2	5	kɔ	lɪ	
1	6	li	tʃʌ	
2	7	fe	lɔɪ	
1	8	lɑɪ	pʌ	
2	9	tæ	lu	
1	10	lo	dʒɝ	
1	11	le	mɑʊ	
2	12	sɑ	lo	
2	13	nɪ	lɑɪ	
2	14	zo	lɪp	
1	15	lɔs	ʃɑz	
1	16	læst	gost	
1	17	let	sit	
1	18	læf	ʃið	
2	19	kɑrt	list	
2	20	fæst	lɛft	
3	1			Push button 3
3	2			Push 3
3	3			3
3	4	lɑ	lɑ	Push 3
3	5	lu	lu	3
3	6	lɑ	lu	3
1	7	lɑ	mɪ	1
2	8	mɑ	lu	2
3	9	lɑ	lɑ	3
3	10	lɑ	lɛ	3
3	11	lɛ	lɔ	3
1	12	lɔ	nɪ	1
2	13	gi	lo	2
3	14	lɔ	lɛ	3
3	15	lɛ	lo	3
3	16	lɑ	le	3
3	17	lu	lu	
3	21	lɑ	lɑ	
3	22	lu	lu	
2	23	nɪ	lɑʊ	
1	24	lɛ	vɑr	
2	25	zɝ	lo	
3	26	lɛ	lu	
3	27	lɔ	li	
3	28	lɑ	lʊ	
1	29	le	vɔɪ	
1	30	li	tʃæ	
2	31	jɑ	liv	
2	32	po	lɛs	
1	33	lʌv	mutʃ	
2	34	bɑʃ	lʊk	
3	35	lɑɪt	lɑɪt	
3	36	lɛg	lɛg	
3	37	lænd	lænd	
1	38	læmp	gɑt	
1	39	lɛt	ki	
3	40	lɛt	lɛtɚ	
4	1			Push button 4
4	2			Push 4
4	3			4
4	4	mɑ	mɑ	Push 4
4	5	mɛ	mɛ	4
4	6	mɛ	mɑ	4
1	7	lɑ	nɪ	1
3	8	lɑ	lu	3

2	9	pɔ	lu	2
4	10	mɔ	nɛ	4
4	11	ni	sɑ	4
3	12	lu	lɛ	3
2	13	pɛ	lɑ	2
1	14	lo	ge	1
4	15	gɛ	gɪ	4
4	16	nɪ	mɛ	4
4	17	pɑ	tu	
4	41	mɑ	mɑ	
4	42	nɔ	nɔ	
2	43	kʌ	laɪ	
4	44	mju	dɔ	
3	45	læ	lo	
3	46	lɪ	lʊ	
1	47	lɛ	bʊr	
3	48	lɔ	le	
4	49	gɑ	zi	
4	50	vɛ	baʊ	
1	51	lek	dʒik	
3	52	laɪt	lutʃ	
2	53	dɔp	lid	
4	54	sæb	wɵg	
4	55	fɔɪp	dɪdʒ	
4	56	res	dɔg	
2	57	bʊk	lɑt	
3	58	lɑk	lʌntʃ	
4	59	fʊt	hæt	
1	60	lɪd	wɑtʃ	
2	61	pot	lɛd	
1	62	let	ʒu	
1	63	lɔŋ	jɛs	
1	64	laɪk	kɑʃ	
2	65	teb	lɪv	
3	66	lik	lʌk	
3	67	læp	ledi	
3	68	lɔg	lɪp	
2	69	fɔɪtʃ	læst	
4	70	wi	tɑp	
1	71	læm	rum	
1	72	laɪk	baɪt	
2	73	jɛt	lɛt	
2	74	bɪz	læf	
2	75	wa^{U}	laɪm	
2	76	jɑð	lɪt	
4	77	dʌst	rʌst	
1	78	laɪmz	waɪz	
4	79	rɪtʃ	pɪtʃ	
1	80	liv	jo	
2	81	vɔɪts	lɛft	
3	82	laɪk	lɔg	
4	83	hoz	ʃoz	
1	84	lif	bif	
2	85	waɪk	laɪf	
1	86	lɪp	jɪp	
1	87	lɛs	jɛs	
2	88	wɛst	læst	
4	89	fʊt	muts	
3	90	laɪn	lʌmp	

[1] I - 3

Training Tape Leader

1	1	Push button 1
4	2	Push button 4
2	3	Push button 2
3	4	Push 3
1	5	Push 1

Listen for [ɑl:]. You will hear two words. [ɑl:] is at the end of the first word. You will press button 1 after you hear [ɑl:].

1	6	ɑl:	ɑm	Push button 1
1	7	ɔl	ɔm	Push 1
1	8	tɔl	tɔm	1
1	9	tʃil	tʃim	1
1	10	ɑl	ɑm	1
2	11			Push button 2

Listen for [ɑl:]. You will hear two words. [ɑl:] is at the end of the second word. You will press button 2 after you hear [ɑl:].

2	12	ɑm	ɑl:	Push button 2
2	13	ɔm	ɔl	Push 2
2	14	tɔm	tɔl	2
2	15	tʃim	tʃil	2
2	16	ɑm	ɑl	2
1	17			Push button 1

Listen for [ɑl:]. You will hear two words. When [ɑl:] is at the end of the second word, you will press button 2. When [ɑl:] is at the end of the first word, you will press button 1.

1	18	ɑl	ɪp	Push 1
1	19	il	ɪg	1
2	20	ɪm	ɑl	Push 2
2	21	ɑp	ul	2
2	22	ɪr	ul	2
1	23	ul	ɪdʒ	1
1	24	ɑl	ɪg	1
2	25	ɛn	il	2
2	26	ɛp	ɔl	2
1	27	ɑl	ot	1

Program

1	1	ɑl	um	
1	2	ɑl	im	
1	3	ul	ɛk	
2	4	ɛp	ɑl	
2	5	ɔʃ	ɪl	
1	6	il	ʌt	
2	7	ez	ɔɪl	
1	8	aɪl	ʌdʒ	
2	9	æp	jul	
1	10	ol	ɜs	
1	11	ɔl	im	
2	12	tæz	fɪl	
2	13	gɑr	ril	
2	14	ʒʌg	tɛl	
1	15	mel	bun	
1	16	bɔl	æsk	
1	17	ɪl	dɔr	
1	18	hol	kip	
2	19	kæt	fel	
2	20	ɛg	pʊl	
3	1			Push button 3
3	2			Push 3
3	3			3
3	4	ɔl	ɔl	Push 3
3	5	ul	ul	3
3	6	ɔl	ul	3
1	7	ɔl	um	1
2	8	ɑm	il	2
3	9	ɔl	ɔl	3
3	10	il	ɔl	3
2	11	ɛp	ol	2
1	12	il	ɑg	1
3	13	ol	ul	3
3	14	ɔl	ɛl	3
3	15	ul	ul	
3	21	ɑl	ɑl	
3	22	ul	ul	
2	23	ɪb	aʊl	
1	24	ɛl	ɑrθ	
2	25	ɜg	ol	
3	26	ɛl	ul	
3	27	ɔl	il	
3	28	ɑl	ʊl	
1	29	el	ɔɪtʃ	
1	30	il	æk	
2	31	hɪs	hɔl	
2	32	jɛn	rol	
1	33	sɔɪl	sep	
2	34	dʒɜn	fɛl	
3	35	nel	nel	
3	36	kul	skul	
3	37	tebl	stebl	
1	38	nel	med	
1	39	kɔl	sɔ	
3	40	æpl	ɔɪl	
4	1			Push button 4
4	2			Push 4
4	3			4
4	4	ɑm	ɑm	Push 4
4	5	im	im	4
4	6	ɑm	ip	4
1	7	ɔl	um	1
3	8	ul	ul	3
2	9	ɪp	il	2
4	10	ɪp	um	4
4	11	ɔg	ɪŋ	4
4	12	ɪŋ	ɛg	
3	13	ɔl	ol	3
1	14	il	ʌʒ	1
2	15	θʒ	el	2
4	16	ɪp	ɑm	4
4	17	ɔp	ɔp	
4	41	ɑm	ɑm	
4	42	ɔs	ɔs	
2	43	ʌb	aɪl	
4	44	jut	ɔd	
3	45	æl	ol	
3	46	ɪl	ʊl	
1	47	ɛl	ʊrk	
3	48	ɔl	el	
4	49	ɑk	idʒ	
4	50	ɛz	aʊʃ	
1	51	bɔl	ɔrz	
3	52	kul	ril	
2	53	ʃɛb	tɛl	
4	54	nɜt	ʃɜŋ	
4	55	wɑf	jætʃ	
4	56	bon	bɔɪ	
2	57	frɛʃ	fɪl	
3	58	kɔl	smaɪl	
4	59	stænd	θri	
1	60	stul	stɛp	
2	61	jɔs	wɛl	
1	62	wɪl	wɪnd	
1	63	hol	bɛd	
1	64	sɛl	sif	
2	65	huð	wɔl	
3	66	fɜl	ʌntɪl	
3	67	ʌŋkl	æŋkl	
3	68	fɔl	aɪl	
2	69	skuf	skul	
4	70	bʊk	fud	
1	71	fil	fid	
1	72	ʃæl	sæŋ	

2	73	hwaɪt	hwaɪ
2	74	fɛ	fɛl
2	75	sɜm	sɜkəl
2	76	krɪm	ænɪməl
4	77	hænd	fɑr
1	78	fʊl	fju
4	79	gɛt	kʊk
1	80	maɪl	maɪθ
2	81	hɪr	hɪl
3	82	bɝl	smɔl
4	83	opɛn	pepɚ
1	84	gɝl	dʒɜm
2	85	geʃ	sel
1	86	tɪl	tætʃ
1	87	tɔl	tɔk
2	88	pʊt	pʊl
4	89	fʊt	bɑz
3	90	bætəl	kɝl

[1] I - 4

Training Tape Leader

1	1	Push button 1
4	2	Push button 4
2	3	Push button 2
3	4	Push 3
1	5	Push 1

Listen for [l:ɑ]. You will hear two words. [l:ɑ] is in the middle of the first word. You will press button 1 after you hear [l:ɑ].

1	6	ɑlɑ	ɑmɑ	Push button 1
1	7	olo	omo	Push 1
1	8	ɑlu	ɑmu	1
1	9	ɛlp	ɛmp	1
1	10	ilp	imp	1
2	11			Push button 2

Listen for [l:ɑ]. You will hear two words. [l:ɑ] is in the middle of the second word. You will press button 2 after you hear [l:ɑ].

2	12	ɑmɑ	ɑlɑ	Push button 2
2	13	omo	olo	Push 2
2	14	ɑmu	ɑlu	2
2	15	ɛmp	ɛlp	2
2	16	imp	ilp	2
1	17			Push button 1

Listen for [l:ɑ]. You will hear two words. When [lɑ] is in the middle of the second word, you will press button 2. When [lɑ] is in the middle of the first word, you will press button 1.

1	18	ɑlɑ	ɑmɑ	Push button 1
1	19	ɑlɑ	umɑ	Push 1
2	20	ɛmə	ɑli	Push 2
2	21	ɪpe	ulə	2
1	22	ile	ʌtɑ	1
2	23	otu	ɛli	2
2	24	unɑ	olɑ	2
1	25	oli	upə	1
1	26	uli	ɛpɛ	1
2	27	æmɛ	ilɔ	2
1	28	ɑle	ɛgə	1

Program

1	1	ɑlɑ	umu	
1	2	ɑlɑ	imi	
1	3	ulo	ɛʃʌ	
2	4	ɛpɑr	ɑlɚ	
2	5	ɪʃi	ɔlt	
1	6	ilɛr	ʌtʃo	
2	7	ɔɪze	elo	
1	8	aɪli	ʌdʒɚ	
2	9	æpu	jult	
1	10	olɚ	ɜsi	
1	11	əlon	əmiθ	
2	12	zɪpɪʃ	biliv	
2	13	kæfɪŋ	kɔlɪŋ	
2	14	ɛtəm	ɝli	
1	15	fɛlt	gɪst	
1	16	əlɔŋ	opən	
1	17	fɑlo	fɑðɚ	
1	18	tɛlɪŋ	taɪgɚ	
2	19	əbʌv	əlon	
2	20	prɛs	kloz	
3	1			Push button 3
3	2			Push 3
3	3			3
3	4	ɑlɑ	ɑlɑ	Push 3
3	5	ulə	ɑlɑ	3
2	6	ɑmə	ɑlə	2
1	7	uli	ɑtʃə	1
3	8	uli	ɑlə	3
3	9	ilo	ɑlɚ	3
3	10	ɑlu	uli	3
1	11	ɑlu	ɪpe	1
2	12	ɛkə	ulɛ	2

3	13	ulɚ	ali	3
3	14	ulu	uli	3
3	21	ala	ala	
3	22	ulu	ulo	
2	23	iʃt	aʊlt	
1	24	tɛlo	tarθi	
2	25	ɜge	olo	
3	26	ɛlɪŋ	ulɪŋ	
3	27	ɔld	ilɚ	
3	28	ælu	ʊlʃ	
1	29	zelt	zɔɪft	
1	30	pilo	pæko	
2	31	əbɪŋ	əlɔŋ	
2	32	bɪkəm	biliv	
1	33	kʌlɚ	kækɚ	
2	34	fotɚ	filɪŋ	
3	35	ples	ples	
3	36	tʃaɪld	tʃaɪld	
3	37	blæk	blæk	
1	38	ɔlwez	obez	
1	39	fɔlɪŋ	netɪŋ	
3	40	dalɚ	dalɚ	
4	1			Push button 4
4	2			Push 4
4	3			4
4	4	ama	ama	Push 4
4	5	ama	apa	4
1	6	alə	apo	1
3	7	ali	ulə	3
4	8	ɛgɔ	ɪpu	4
2	9	ɪge	ela	2
4	10	ɪkɔ	ɪge	4
4	11	ama	epi	4
3	12	ala	ɛli	3
2	13	ʌtʃi	elu	2
1	14	ula	igə	1
4	15	ɪgə	ɪmə	4
4	16	ɔse	ɔsu	4
4	41	ame	ame	
4	42	gɔsu	gɔsʌ	
2	43	ʌba	aɪlo	
4	44	jutɚ	ɔdaɪ	
3	45	ælɚ	olɚ	
3	46	ɪlt	ʊlz	
1	47	ɛlɪŋ	ʊrkɪŋ	
3	48	ɔlz	elaɪ	
4	49	ade	iwe	
4	50	ɛju	aʊbɚ	
1	51	ɔlmost	ɔfʊt	
3	52	biliv	bilo	
2	53	ɝje	ɝlɪ	
4	54	θewi	θejɛ	
4	55	midɚ	əwon	

4	56	fidɪŋ	əje
2	57	fidz	fɛlt
3	58	flɔr	flaɪ
4	59	kʌwɚ	mʌnde
1	60	pletaɪm	pəred
2	61	edæks	aɪlæʃ
1	62	dalɚ	bækwɝd
1	63	fæmlɪ	kændɪ
1	64	sæləd	ʃæjə
2	65	krat	klak
3	66	ɝli	onlɪ
3	67	plænt	plaʊ
3	68	hɛlp	kɔlɪŋ
2	69	gəˈwɪz	bəˈlun
4	70	bijɔnd	ʌnjən
1	71	əlon	əbon
1	72	ənlɛs	əndrɛs
2	73	bʊt	bɪlt
2	74	ʃoju	ʃælo
2	75	ɝbe	ɝli
2	76	hewa	jɛlo
4	77	tude	əwe
1	78	əlaɪk	əwek
4	79	haɪwe	natjɛt
1	80	əlaɪv	əwaɪk
2	81	pʊjɪŋ	pʊlɪŋ
3	82	blæk	slip
4	83	bɪjɔnd	ɛnɪwe
1	84	flɔr	fɔr
2	85	dʒidɚ	silɪŋ
1	86	dalɪ	dawɪ
1	87	glæs	græs
2	88	fidɪŋ	filɪŋ
4	89	pewez	ɪndid
3	90	waɪld	ɛlbo

[1] I - 5

Training Tape Leader

1	1		Push button 1
4	2		Push button 4
2	3		Push 2
3	4		Push 3
1	5		Push 1

Listen for [l:ə]. You will hear one word. [l:ə] is at the beginning of the word. You will press button 1 after you hear [l:ə].

1	6	l:ə	Push button 1
1	7	la	Push 1
1	8	lap	1

1	9	lup	1
3	10		Push button 3

Listen for [ɑl:]. You will hear one word. [ɑl:] is at the end of the word. You will press button 3 after you hear [ɑl:].

3	11	ɑl:	Push button 3
3	12	sɑl	Push 3
3	13	tɑl	3
3	14	tɛl	3
2	15		Push button 2

Listen for [l:ə]. You will hear one word. [l:ə] is in the middle of the word. You will press button 2 after you hear [l:ə].

2	16	ɑl:ə	Push button 2
2	17	ɑli	Push 2
2	18	ɑld	2
2	19	sold	2
1	20		Push button 1

You will hear one word. Listen for [l:ə]. When [lə] is at the end, you will press button 3. When [lə] is in the middle, you will press button 2. When [lə] is at the beginning, you will press button 1.

1	21	lɑg	Push 1
2	22	ɑli	Push 2
3	23	sɑl	Push 3
3	24	ʃul	3
1	25	lɑp	1
2	26	julo	2
1	27	lup	1
3	28	bil	3
2	29	slʌ	2
2	30	plʌ	2
3	31	ɔl	3
1	32	lɑg	1

Program

1	1	lɑg	
2	2	ɑli	
3	3	sɑl	
3	4	til	
1	5	leθ	
2	6	uldʒ	
1	7	lɑp	
3	8	ʃil	
2	9	ɔlən	
2	10	ilo	
3	11	ɔl	
2	12	ɔlmost	
2	13	ɪltʃ	
1	14	læŋ	
2	15	plɔɪ	
1	16	læst	
3	17	smaɪl	
1	18	lɛft	
1	19	luf	
3	20	pɔɪl	
2	21	əlon	
3	22	tɛl	
1	23	let	
3	24	pʊl	
1	25	læf	
1	26	liv	
2	27	ɜlɪ	
3	28	nel	
2	29	kloz	
3	30	bɔl	
4	1		Push button 4
4	2		Push 4
4	3		4
4	4	mɑp	4
4	5	fiv	4
4	6	one	4
4	31	ɑnu	
4	32	zɑp	
4	33	kɑv	
3	34	tʃɛl	
1	35	luf	
2	36	fɔlɪŋ	
4	37	rum	
3	38	tæl	
4	39	ebɚ	
2	40	kʌlɚ	
1	41	lɪft	
1	42	lɔst	
3	43	fɛl	
4	44	æd	
2	45	ɔlso	
4	46	jɛs	
1	47	laɪt	
2	48	əlɔŋ	
3	49	ɔɪl	
2	50	klæs	
2	51	dɑlɚ	
3	52	fɪl	
1	53	lɛg	

4	54	wɪʃ
3	55	ʃæl
3	56	bɪl
3	57	kul
4	58	əwe
2	59	filɪŋ
1	60	lɜn
2	61	pliz
4	62	jɛt
3	63	hɔl
1	64	lɪp
1	65	lif
4	66	ɛnd
3	67	æpəl
1	68	lʌntʃ
4	69	hænd
2	70	biliv
1	71	ledi
4	72	kɑr
3	73	stul
4	74	hɛdek
3	75	smɔl
2	76	ɛls
3	77	skul
4	78	wet
2	79	blæk
1	80	lʌmp
2	81	ɜlɪ
1	82	laɪn
4	83	bifɔr
4	84	fidɪŋ
2	85	flaɪ
4	86	tu'de
1	87	lɑk
4	88	gɑrdɛn
1	89	lɔŋ
4	90	hwaɪt

[1] I - 6

Training Tape Leader

1	1	Push button 1
4	2	Push button 4
2	3	Push 2
3	4	Push 3
1	5	Push 1

Listen for [l:ə]. You will hear one word. There is one [l:ə] in the word. You will press button 1 when you hear one [l:ə] in the word.

1	6	l:ə	Push 1
1	7	ɑl	Push 1
1	8	ɑlə	Push 1
1	9	lopɪ	1
1	10	blok	1
1	11	spel	1
3	12		Push button 3

Listen for [l:ə]. You will hear one word. There is more than one [l:ə] in the word. You will press button 3 when you hear two [l:ə] in the word.

3	13	lə'lo	Push 3
3	14	'lolə	Push 3
3	15	plolə	Push 3
3	16	klolɪ	3
3	17	blæfʊl	3
3	18	plili	3
4	19		Push button 4

Now you will hear one word, but [l:ə] is not in the word. You will not hear [l:ə]. After you hear the word, you will press button 4.

4	20	no	Push 4
	21	nɑt	Push 4
4	22	spem	4
4	23	mɑst	4
1	24		Push button 1

You will hear one word. Listen for [l:ə]. When there is no [l:ə], you will press button 4. When there is more than one [l:ə], you will press button 3. When there is one [l:ə], you will press button 1.

1	25	l:ə	Push 1
1	26	ɑl	1
3	27	lə'lo	Push 3
3	28	'lolə	3
4	29	no	Push 4
4	30	nɑt	4
1	31	ɑlə	1
1	32	lopɪ	1
4	33	spem	4
3	34	ploli	3
1	35	blok	1
1	36	spel	1
1	37	gɔpəl	1
3	38	blæfʊl	3
4	39	mɑst	4
1	40	laɪt	1

Program

1	1	laɪt
1	2	ɝli
1	3	ɪl
3	4	lɪtəl
4	5	wɪθ
3	6	letlɪ
1	7	læst
4	8	jɛt
1	9	əlon
1	10	pʊl
4	11	wet
1	12	lɛft
1	13	klæs
1	14	fɪl
1	15	dɑlɪ
3	16	slolɪ
1	17	ledɪ
1	18	æpəl
4	19	raɪt
3	20	laɪvlɪ
1	21	ɔlwez
1	22	lɔst
4	23	jɛstɝde
3	24	plefʊl
1	25	blæk
4	26	wɛt
1	27	fʊl
1	28	biliv
1	29	lɑrdʒ
4	30	det
3	31	lɑrdʒlɪ
4	32	əwe
1	33	hɛlp
1	34	ʃæl
4	35	brek
1	36	lek
3	37	ledəl
1	38	lɪsən
1	39	fæməlɪ
3	40	luslɪ
4	41	wɪn
1	42	ʌŋkəl
1	43	læmp
1	44	sɝkəl
1	45	ænɪməl

[1] I - 7

Training Tape Leader

1	1			Push button 1
4	2			Push button 4
2	3			Push button 2
3	4			Push 3
1	5			Push 1

Listen for [l:ə]. You will hear two words. When the first word has a good [l:ə], you will press button 1. When the second word has a good [l:ə], you will press button 2.

1	6	laɪk	no	Push 1
2	7	no	laɪk	Push 2
2	8	nu	fɔl	2
1	9	kɔl	taʊn	1
2	10	hwaɪt	blæk	2
1	11	klæs	gɔn	1
3	12			Push button 3

Listen for [l:ə]. You will hear two words. When both words have a good [l:ə], you will press button 3. When neither word has a good [l:ə], you will press button 4.

3	13	laɪk	laɪk	Push 3
3	14	lʊk	laɪk	3
4	15	no	nʌn	4
4	16	hwaɪ	nɑt	4
3	17	ɔl	fɔl	3
3	18	kloz	klæs	3
1	19			Push button 1

Listen for [l:ə]. You will hear two words. When [lə] is in the first word, you will press button 1. When [lə] is in the second word, you will press button 2. When [lə] is in both words, you will press button 3. When [lə] is in neither word, you will press button 4.

1	20	laɪk	no	Push 1
2	21	no	laɪk	2
3	22	laɪk	laɪk	3
4	23	no	nʌn	4
3	24	ɔl	fɔl	3
4	25	hwaɪ	nɑt	4
2	26	fɔt	fɔl	2
1	27	kɔl	kɔf	1
1	28	klæs	pæs	1
2	29	pɛst	pɛlt	2
4	30	θɑt	nɑt	4
3	31	læf	læf	3
1	32	le	ne	1

Program

1	1	le	ne
2	2	ɔt	ɔl
3	3	ɝlɪ	ɝlɪ
4	4	bɔɪ	bɔɪ
1	5	lɔs	sɔs
3	6	læf	læf
4	7	det	det
2	8	fɪst	lɪst
1	9	lɛft	θɛft
1	10	dʌl	dʌv
2	11	roz	rol
1	12	tɛl	tɛn
2	13	kup	kul
2	14	bɛg	lɛg
2	15	daɪ	laɪ
1	16	fɛlt	fɛʃt
1	17	lɛs	jɛs
2	18	pʊʃ	pʊl
1	19	ple	pre
2	20	ɔrd	old
2	21	ɛns	ɛls
2	22	onwɪ	onlɪ
3	23	lɔs	lɔst
3	24	sɝkəl	sɝkəl
2	25	jet	let
2	26	gɝb	gɝl
2	27	fɛd	fɛl
1	28	əlon	əton
4	29	fidɪŋ	ridɪŋ
1	30	rol	rod
1	31	kʌlɚ	kʌvɚ
2	32	kɝb	kɝl
2	33	jɛs	lɛs
1	34	bɪl	bɪd
2	35	fit	fil
3	36	tebəl	stebəl
2	37	wɪst	lɪst
2	38	jedɪ	ledɪ
1	39	nel	neb
3	40	bɑtəl	bætəl
2	41	fɛtʃt	fɛlt
1	42	bɪl	bɪb
1	43	tɞl	tɛz
4	44	əwe	əwe
1	45	læmp	wæmp
1	46	tʃɪl	tʃɪn
1	47	lɔn	jɔn
2	48	wiv	liv
1	49	stul	stup
2	50	bʌmp	lʌmp
2	51	fidɪŋ	filɪŋ
2	52	fraɪ	flaɪ
1	53	lɔŋ	wɔŋ
1	54	fɪlɪŋ	fɪʃɪŋ
4	55	rid	ridz
2	56	kɔzɪŋ	kɔlɪŋ
2	57	rid	ril
2	58	tond	told
1	59	rilɪ	ribɪ
2	60	kɔf	kɵl
1	61	lɪp	jɪp
1	62	sel	sef
1	63	lɑrd	jɑrd
4	64	pæd	pæd
1	65	gɝl	gɝz
4	66	wɛst	jɛs
2	67	hɪbɪ	hɪlɪ
3	68	let	lɛt
2	69	dus	lus
1	70	faɪlɪŋ	faɪtɪŋ
1	71	bilo	biwo
1	72	dɑlɚ	dɑdɚ
3	73	fɔlɪŋ	fɪlɪŋ
1	74	sil	sid
2	75	ʃeb	ʃel
1	76	lɔg	jɔg
2	77	wem	lem
3	78	klos	klæs
1	79	ɔlso	ɔdso
4	80	sɛd	sid
4	81	bijɑnd	biwɛr
1	82	filɚ	fidɚ
2	83	kraɪm	klaɪm
1	84	əlaʊ	əwaʊ
1	85	læm	jæm
2	86	waɪf	laɪf
2	87	rɑb	rol
2	88	dɑwɚ	dɑlɚ
2	89	howɪ	holɪ
1	90	lek	wek

[1] II - 1

1	mɑ
2	nɛ
3	tɔ
4	lɑ
5	tɑ
6	lɑ
7	nu
8	lu
9	li
10	aɪm
11	aɪn

12 at
13 ɔl
14 ɛl
15 an
16 il
17 un
18 aɪl
19 taʊ
20 laʊ
21 di
22 lɛ
23 ɛmɛ
24 ana
25 ata
26 ala
27 oto
28 olo
29 ole
30 unu
31 ulu
32 uto
33 aʊn
34 ɔɪ
35 ɪn
36 il
37 dæ
38 la
39 lʌ
40 ɛde
41 ɔɪle
42 ɔli
43 we
44 ul
45 lɪ
46 je
47 ɪla
48 ʌl
49 ʊle
50 læ

[1] II - 2

1 ma
2 nɛ
3 tɔ
4 la
5 ta
6 la
7 nu
8 lu
9 li
10 so
11 lo
12 le
13 tɛ
14 lɛ
15 lɛt
16 am
17 un
18 ɪt
19 ɪl
20 hwaɪ
21 hwaɪl
22 ho
23 hol
24 bol
25 ɔl
26 fɔl
27 kɔl
28 fʊt
29 fʊl
30 pʊl
31 pul
32 naɪt
33 laɪt
34 ænd
35 lænd
36 ama
37 unu
38 ɛti
39 olo
40 on
41 onli
42 hɛd
43 hɛlo
44 hɛlp
45 sef
46 sɛlf
47 gæs
48 glæs
49 aɪv
50 əlaɪv
51 əlaɪk
52 tɛn
53 tɛl
54 wɛl
55 bʊk
56 lʊk
57 lʌv
58 gev
59 glʌv
60 mel
61 meld
62 old
63 raɪt
64 rɔŋ
65 lɔ
66 lɔŋ

67 lɔŋgɚ
68 jɛs
69 aɪl
70 paɪl
71 paɪlz
72 pez
73 lo
74 jɛl
75 jɛlo
76 ɑl
77 dɑl
78 dɑlɚ
79 kʌlɚ
80 læst

[1] II - 3

1 mɑ
2 tɑ
3 lɑ
4 li
5 nɔɪ
6 lɔɪ
7 nu
8 lu
9 laɪ
10 ɪn
11 ɪl
12 fɪl
13 fɛr
14 fɛl
15 tɑt
16 tɑl
17 tɛl
18 lɛt
19 lɛts
20 ɑtɑ
21 ɑlɑ
22 əlu
23 əlaʊ
24 ɛro
25 ɛlo
26 hɛlo
27 pel
28 pɑt
29 ɑl
30 kɔl
31 ɑn
32 lɔn
33 tʊk
34 lʊk
35 pi
36 pip
37 pipəl
38 pipəz
39 paɪz
40 aɪl
41 waɪl
42 aɪld
43 tʃaɪld
44 li
45 lin
46 klin
47 kliɪɚ
48 tʃɪl
49 tʃɪld
50 tʃɪldrən
51 laɪ
52 laɪk
53 laɪv
54 əlaɪv
55 ʊl
56 kul
57 skul
58 li
59 lip
60 slip
61 sliv
62 ʌl
63 bʌl
64 ebəl
65 tebəl
66 lɪt
67 lɪtəl
68 lʌv
69 lʌvli
70 let
71 letɚ
72 lɔŋ
73 əlɔŋ
74 bilɔg
75 ol
76 old
77 oldɚ
78 jɛl
79 jɛlo
80 læst

[1] II - 4

1 lɑ
2 lɔ
3 lɔs
4 lɔst
5 ɛl
6 ulc
7 kul
8 skul

9 kuls
10 ɪli
11 tʃɪli
12 tʃɪlɪŋ
13 læ
14 læd
15 læds
16 olə
17 old
18 kold
19 ɛl
20 pɛl
21 spɛl
22 spɛlɪŋ
23 ləɪ
24 ləɪən
25 laɪɪŋ
26 ɔl
27 ɔlso
28 ɔlðo
29 lɔŋ
30 əlɔŋ
31 bəlɔŋ
32 bəlo
33 ɑl
34 dɑl
35 dɑlɔ̆
36 dɑlɚ bɪl
37 lɑk
38 klɑk
39 əklɑk
40 tu əklɑk
41 ɛl
42 tɛl
43 tɛlɪŋ
44 tɛlɪŋ ʌs
45 li
46 onli
47 onli wʌn
48 ɛlp
49 hɛlp
50 hɛlp mi
51 ol
52 old
53 hold
54 hold ɔn
55 lʊk
56 lʊkɪŋ
57 ʃiz lʊkɪŋ
58 əlon
59 ʃiz əlon
60 ʃiz əlon naʊ
61 ledi
62 lediz
63 ðə lediz
64 ðə lediz rum
65 læst
66 ðə læst
67 ðə læst taɪm
68 lʌv
69 lʌv ju
70 aɪ lʌv ju
71 lun
72 bəlun
73 rɛd bəlun
74 fɔl
75 fɔlɪŋ
76 hiz fɔlɪŋ
77 hiz fɔlɪŋ daʊn
78 lɛt
79 lɛts
80 lɛts go

[1] II - 5

1 lɔ
2 lɔs
3 lɔst
4 ɔl
5 mɔl
6 smɔl
7 old
8 hold
9 gold
10 glæd
11 lɔ
12 lɔŋ
13 lɔŋ taɪm
14 ɔl
15 bɔl
16 hɪz bɔl
17 ol
18 old
19 old mæn
20 laɪt
21 ðə laɪt
22 ɪn ðə laɪt
23 maɪl
24 ə maɪl
25 rʌn ə maɪl
26 ples
27 ðə ples
28 ðæts ðə ples
29 skul
30 maɪ skul
31 æt maɪ skul

32 laɪk
33 aɪ laɪk
34 aɪ laɪk hɚ
35 klaʊdz
36 ðə klaʊdz
37 ðə bɪg klaʊdz
38 sɔlt
39 ðə sɔlt
40 pæs ðə sɔlt
41 əlon
42 hiz əlon
43 hiz ɔl əlon
44 hiz ɔl əlon naʊ
45 lʊk
46 lʊk ʌp
47 pliz lʊk ʌp
48 hɔl
49 ðə hɔl
50 ɪn ðə hɔl
51 ɪn ðə lɑrdʒ hɔl
52 lɛft
53 ʃi lɛft
54 ʃi lɛft læst
55 fɛl
56 hi fɛl
57 hi fɛl ɔf
58 hi fɛl ɔf ðə wɔl
59 slo
60 hiz slo
61 hiz rili slo
62 læf
63 læfɪŋ
64 aɪm læfɪŋ
65 aɪm ɔlwez læfɪŋ
66 glæs
67 ə glæs
68 ə glæs əv mɪlk
69 lɛtɚ
70 ðə lɛtɚ
71 ðə lɔŋ lɛtɚ
72 rid ðə lɔŋ lɛtɚ
73 sɛlf
74 jʊrsɛlf
75 hɛlp jʊrsɛlf
76 ju hɛlp jʊrsɛlf
77 stɪl
78 stænd stɪl
79 sɪt stɪl
80 pliz sɪt stɪl

[1] II - 6

1 laɪt
2 ðə laɪt
3 ðə braɪt laɪt
4 skul
5 maɪ skul
6 ɪts maɪ skul
7 əlɔŋ
8 kʌm əlɔŋ
9 ju kʌm əlɔŋ
10 lɛtɚ
11 ə lɛtɚ
12 raɪt ə lɛtɚ
13 raɪt ə lɔŋ lɛtɚ
14 smaɪl
15 smaɪld
16 ðe smaɪld
17 ðe smaɪld ə lɑt
18 læst
19 hiz læst
20 hiz ɔlwez læst
21 ðə klɑk
22 æt ðə klɑk
23 lʊk æt ðə klɑk
24 lʊk æt ðə klɑk naʊ
25 sɝ kəl
26 ə lɑrdʒ sɝkəl
27 mek ə lɑrdʒ sɝkəl
28 ðə tʃɪldrən
29 ðə tʃɪldrən ɝ pleɪŋ
30 ðə tʃɪldrən ɝ pleɪŋ bɔl
31 lɪtəl
32 hiz lɪtəl
33 aɪm lɪtəl tu
34 slo
35 ʃiz slo
36 hiz sloɚ
37 hiz rili slo
38 dɑlɚ
39 maɪ dɑlɚ
40 ɪts maɪ dɑlɚ bɪl
41 ɪts nɑt jʊr dɑlɚ bɪl
42 maɪ ʌŋkəl
43 maɪ ʌŋkəl kem
44 maɪ ʌŋkəl kem let
45 hiz juʒəli let
46 ðə slaɪd
47 ple ɔn ðə slaɪd
48 lɛts ple ɔn ðə slaɪd
49 lɛts ple wɪθ ðə bɔl
50 ə bɛlt
51 ə blæk bɛlt
52 aɪ faʊnd ə blæk bɛlt
53 dɪd ju luz ðə bɛlt
54 lɝnd
55 wi lɝnd ðə lɛsən

56 wi lɜnd ɪt wɛl
57 hi lɜnd sʌmθɪŋ ɛls
58 ðə flauɚ
59 ðə blu flauɚ
60 ðə flauɚ ɪz braɪt blu
61 smɵl
62 ə smɔl kʊki
63 onli ə smɔl kʊki
64 aɪ dont laɪk smɔl wʌnz
65 hɛlp mi
66 wɪl ju hɛlp mi
67 hɛlp mi lɪft ðɪs
68 aɪl hɛlp ju letɚ
69 maɪ glæsɪz
70 aɪv lɔst maɪ glæsɪz
71 ðə glæsɪz wɝ ɔn ðə tebl̩
72 dɪd ðe fɔl ɔn ðə flɔr
73 læfɪŋ
74 ðe wɝ læfɪŋ
75 ðe wɝ læfɪŋ aʊt laʊd
76 ðe læf laɪk ðæt ə lɑt
77 klaɪmd
78 hi klaɪmd ʌɒ ðə pol
79 ðə pol ɪz vɛri tɔl
80 hi ɔlmost fɛl daʊn

[1] II - 7

1 wɛl ɑr ju rɛdi
2 lɛts stɑrt naʊ
3 wil se lɑts əv θɪŋz
4 jul se ðɛm laɪk mi
5 lɪsən tu itʃ wʌn
6 dɪd ju ple təde
7 wi hæd lɑts tə du
8 aɪl tɛl ju əbaʊt skul
9 wi juʒəli du sʌm spɛlɪŋ
10 sʌmtaɪmz wi sɪt æt ðə tebl̩
11 wi rid əbaʊt lɑts əv θɪŋz
12 bʊks hɛlp ʌs lɜn
13 ðə titʃɚ tɛlz ʌs tu
14 sʌmtaɪmz wi juz ðə blækbɔrd
15 ju kən lɜn əbaʊt flauɚz
16 ðe laɪk sʌn n̩ ren
17 sʌm flauɚz ɑr blu
18 du ju laɪk flauɚz
19 wi ɔlwez hæv sʌm hɪr
20 læst wik aɪ wʌz sɪk
21 ðe brɔt maɪ lɛsənz hom
22 aɪ rɛd lɑts əv stɵriz
23 sʌm med mi læf
24 aɪ rot ə lɛtɚ tu
25 lɛtɚz ɑr hɑrd tə raɪt
26 aɪ lɔst maɪ pɛnsəl
27 ɪt wəz ɔn ðə flɔr
28 aɪ lʊkt ə lɔŋ taɪm
29 mebi aɪ nid glæsɪz
30 du ju no bɪl
31 hi lɪvz baɪ ʌs
32 bɪl ɪz ril tɔl
33 wi kɔl hɪm binpol
34 jud laɪk bɪl tu
35 hiz gɑt ə lɪtəl sɪstɚ
36 hɝ nemz sæli
37 sæli ɪz ɔlwez pleɪŋ
38 ʃi rili hæz fʌn
39 sʌmtaɪmz ʃi plez ɔn ðə slaɪd
40 ʃi læfs n̩ rʌnz
41 sæli klaɪmd ə tri wʌns
42 aɪ θɔt ʃid fɔl
43 ʃi gɑt daʊn ɔlraɪt
44 ʃi gɑt ə skoldɪŋ
45 aɪ hæv ə nu bɛlt
46 ɪts ə blæk bɛlt
47 aɪ onli hæv wʌn bɛlt
48 ɪt holdz maɪ pænts ʌp
49 lɛts si hwɑt ɛls wɪl se
50 wiv lɜnd ə gʊd ɛl
51 sʌm lɜ̃nd əbaʊt ɑr
52 ɪt wʌz lɑts əv wɝk
53 sʌmtaɪmz ɪt wʌz slo
54 wiv hæd ə fju læfs
55 ɪts gʊd tə smaɪl
56 wi fil bɛtɚ ðɛn
57 aɪm ɔlmost nɛvɚ blu
58 dɪd ju tɛl mi jʊr nem
59 maɪ nemz rælf
60 wɛr du ju lɪv
61 aɪ lɪv aʊt wɛst
62 ðæts ə lɔŋ we əwe
63 lɪsən kɛrfəli naʊ
64 wil sun du ðɛm ɔl
65 du ju rimɛmbɚ bɪl
66 hiz gʊd ət besbɔl
67 bɪl rʌnz ril fæst tu
68 hi plez fɝst bes
69 hiz ʌŋkəl hɛlps hɪm lɜn
70 ðe ple kɛtʃ ət ðɛr haʊs
71 bɪl læfs wɛn hi mɪsəz
72 hi juʒəli kɛtʃəz ðə bɔl
73 aɪ hɝd ə laʊd nɔɪz
74 sʌmθɪŋ fɛl ɔn ðə flɔr
75 ɪt rili med ə bæŋ
76 aɪ kænt tɛl wʌt ɪt wʌz
77 ðe tɜnd ðə laɪts ɔn
78 ðæt hɛlps ə lɑt
79 wɪr ɔlmost dʌn
80 ðɪs ɪz ðə læst wʌn

[ʃ] BTT -2

Listen for [ʃ]. You will hear one word. After you hear [ʃ], you will press button 1.

1	1	ʃːʌ	Push button 1
1	2	ʃʌ	Push 1
1	3	ʌʃː	Push 1
1	4	ʌʃ	Push 1
1	5	ʃʌ	1
1	6	ʌʃ	1
1	7	ɑʃ	1
1	8	ʃɑ	1
4	9		Push button 4

Now, you will hear one word, but [ʃ] is not in the word. You will not hear [ʃ]. After you hear the word, you will press button 4.

4	10	mːʌ	Push button 4
4	11	mʌ	Push 4
4	12	ʌmː	Push 4
4	13	ʌm	Push 4
4	14	bʌ	4
4	15	ʌb	4
4	16	gɛ	4
4	17	ɔg	4
1	18		Push button 1

Listen for [ʃ]. You will hear one word. If you don't hear [ʃ], you will press button 4. When you hear [ʃ], you will press button 1.

1	19	ʃːʌ	Push 1
1	20	ʃɑ	1
1	21	ɑʃ	1
4	22	ɑm	Push 4
4	23	mɑ	4
4	24	mʌ	4
1	25	ʃɔ	1
1	26	oʃ	1
4	27	nɑ	4
1	28	iʃ	1
4	29	ub	4
4	30	un	4
1	31	ʃɛ	1
4	32	in	4
1	33	ʃɑ	1

[ʃ] I - 1
Training Tape Leader

1	1	Push button 1
4	2	Push button 4
2	3	Push button 2
3	4	Push 3
1	5	Push 1

Listen for [ʃ]. You will hear one word. [ʃ] is in the word. You will press button 1 after you hear the word.

1	6	ʃːʌ	Push button 1
1	7	ʃɑ	Push 1
1	8	ʃɔ	1
1	9	ɑʃ	1
1	10	ɔʃ	1
1	11	ɛʃ	1
4	12		Push button 4

Now, you will hear one word, but [ʃ] is not in the word. You will not hear [ʃ]. You will press button 4 after you hear the word.

4	13	mːʌ	Push button 4
4	14	mɑ	Push 4
4	15	ɑm	4
4	16	gɛ	4
4	17	dɔ	4
4	18	ɑb	4
1	19		Push button 1

Listen for [ʃ]. You will hear one word. When [ʃ] is not in the word, you will press button 4. When [ʃ] is in the word, you will press button 1.

1	20	ʃɑ	Push 1
1	21	ɑʃ	1
4	22	mɑ	Push 4
4	23	ɑm	4
1	24	iʃ	1
4	25	ig	4
4	26	gɛ	4
1	27	ʃɛ	1
4	28	ɑb	4
1	29	ɔʃ	1
1	30	ʃɑ	1

Program

1	1	ʃɑ

4	2	mɑ
1	3	ʃɑ
4	4	ni
4	5	pe
1	6	ʃu
4	7	rɑ
1	8	ʃi
4	9	bɔ
1	10	ʃi
4	11	vo
4	12	bju
1	13	ʃɔ
4	14	wɪ
4	15	gu
4	16	paʊ
1	17	ʃe
4	18	kɑ
1	19	ʃu
1	20	ʃɔ
4	21	de
4	22	tɔ
1	23	ʃaɪ
1	24	ʃɛ
4	25	ʒɔɪ
1	26	ʃaɪ
1	27	ʃo
4	28	zɛ
1	29	ʃaʊ
4	30	si
1	31	ɑʃ
1	32	ɑʃ
4	33	ɑm
1	34	ɛʃ
4	35	ʊð
1	36	oʃ
4	37	ol
4	38	ik
1	39	ɛʃ
4	40	aɪd
1	41	ɔɪʃ
4	42	ɛt
1	43	ɛʃ
1	44	ɔʃ
1	45	æʃ
1	46	ɔʃ
4	47	ʌʒ
1	48	ɪʃ
1	49	juʃ
4	50	it
4	51	ʊθ
4	52	ɔɪz
1	53	ɛʃ
4	54	etʃ
4	55	uf
4	56	ɑg
4	57	ul
1	58	æʃ
1	59	ɪʃ
1	60	ɝʃ
1	61	ʃɑ
1	62	ɑʃ
4	63	θi
4	64	jun
1	65	ʃæ
1	66	væ
1	67	ɪrʃ
1	68	ʃu
1	69	ɪʃ
4	70	ot
4	71	dʒaɪ
1	72	ɔʃ
1	73	ɪʃ
4	74	aɪtʃ
4	75	ɔf
4	76	jæ
1	77	ʌʃ
4	78	ɑs
4	79	zu
4	80	dʒe
4	81	tʃɛ
1	82	ɑʃ
4	83	ʊrtʃ
4	84	sʌ
1	85	aʊʃ
1	86	ʃɔ
4	87	aɪs
1	88	ʃɑr
1	89	ʃi
1	90	ʃʌ

[ʃ] I - 2

Training Tape Leader

1	1	Push button 1
4	2	Push button 4
2	3	Push button 2
3	4	Push 3
1	5	Push 1

Listen for [ʃ]. You will hear two words. [ʃ] is at the beginning of the first word. You will press button 1 after you hear [ʃ].

1	6	ʃːʌ	mʌ	Push button 1
1	7	ʃɑ	mɑ	Push 1

1	8	ʃam	man	1
1	9	ʃig	mig	1
1	10	ʃa	pɛ	1
1	11	ʃu	nɛ	1
1	12	ʃa	gɔ	1
2	13			Push button 2

Listen for [ʃ]. You will hear two words. [ʃ] is at the beginning of the second word. You will press button 2 after you hear [ʃ].

2	14	mʌ	ʃ:ʌ	Push button 2
2	15	ma	ʃa	Push 2
2	16	man	ʃam	2
2	17	mig	ʃig	2
2	18	pɛ	ʃa	2
2	19	nɛ	ʃu	2
2	20	gɔ	ʃa	2
1	21			Push button 1

Listen for [ʃ]. You will hear two words. When [ʃ] is at the beginning of the second word, you will press button 2. When [ʃ] is at the beginning of the first word, you will press button 1.

1	22	ʃa	pi	Push 1
1	23	ʃɛ	gɪ	1
2	24	mɪ	ʃe	Push 2
2	25	nɪ	ʃu	2
2	26	dɪ	ʃa	2
2	27	da	ʃɛ	2
1	28	ʃu	pɛ	1
1	29	ʃa	nɛ	1
1	30	ʃu	gɔ	1
2	31	nɪ	ʃa	2
1	32	ʃa	nɛ	1

Program

1	1	ʃa	mu	
1	2	ʃa	vi	
1	3	ʃu	nɛ	
2	4	gɛ	ʃa	
2	5	hɔ	ʃʌ	
1	6	ʃi	wɪ	
2	7	pe	ʃɔɪ	
1	8	ʃaɪ	rʌ	
2	9	bæ	ʃaʊ	
1	10	ʃo	gɝ	
1	11	ʃap	lu	
2	12	bju	ʃʊd	
2	13	div	ʃɔr	
2	14	hæ	ʃep	
1	15	ʃaʊt	zɪr	
1	16	ʃed	ðɛr	
1	17	ʃɪp	hwɛn	
1	18	ʃo	jard	
2	19	raɪd	ʃɛlf	
2	20	θri	ʃɛr	
3	1			Push button 3
3	2			Push button 3
3	3			Push 3
3	4	ʃa	ʃa	Push 3
3	5	ʃu	ʃu	3
3	6	ʃa	ʃu	3
1	7	ʃa	mɪ	1
2	8	ma	ʃu	2
3	9	ʃa	ʃa	3
3	10	ʃa	ʃɛ	3
3	11	ʃɛ	ʃɔ	3
1	12	ʃɔ	nɪ	1
2	13	gi	ʃo	2
3	14	ʃɔ	ʃɛ	3
3	15	ʃɛ	ʃo	3
3	16	ʃa	ʃe	3
3	17	ʃa	ʃu	
3	21	ʃa	ʃa	
3	22	ʃu	ʃu	
2	23	mɪ	ʃaʊ	
1	24	ʃɛ	lar	
2	25	vɝ	ʃo	
3	26	ʃɛ	ʃu	
3	27	ʃɔ	ʃi	
3	28	ʃa	ʃʊ	
1	29	ʃe	pɔɪ	
1	30	ʃi	kæ	
2	31	zɔr	ʃaɪn	
2	32	wa	ʃarp	
1	33	ʃʌv	feg	
2	34	nɔɪ	ʃon	
3	35	ʃi	ʃip	
3	36	ʃʊr	ʃɔrt	
3	37	ʃrʌg	ʃɛl	
1	38	ʃæl	dɔg	
1	39	ʃɛr	tɔɪ	
3	40	ʃrɪŋk	ʃit	
4	1			Push button 4
4	2			Push 4
4	3			4
4	4	ma	ma	Push 4
4	5	mɛ	mɛ	4
4	6	mɛ	ma	4
1	7	ʃa	nɪ	1

3	8	ʃɑ	ʃu	3
2	9	dɔ	ʃu	2
4	10	mɔ	nɛ	4
4	11	ni	dɑ	4
3	12	ʃu	ʃɛ	3
2	13	pɛ	ʃɑ	2
1	14	ʃo	ge	1
4	15	gɛ	gɪ	4
4	16	nɪ	mɛ	4
4	17	pɑ	lu	
4	41	mɑ	mɑ	
4	42	bɔ	bɔ	
2	43	nɪ	ʃaɪ	
4	44	vju	ðɔ	
3	45	ʃæ	ʃo	
3	46	ʃʌ	ʃʊ	
1	47	ʃɛ	ʒʊr	
3	48	ʃɔ	ʃe	
4	49	zɑ	gi	
4	50	wɛ	dʒaʊ	
1	51	ʃem	θɛ	
3	52	ʃʊd	ʃut	
2	53	tɑdʒ	ʃɪvɚ	
4	54	mjup	pod	
4	55	læv	jip	
4	56	naɪf	dɪd	
2	57	tɛn	ʃɑp	
3	58	ʃaʊɚ	ʃuz	
4	59	kem	dʒok	
1	60	ʃɑk	zu	
2	61	ʒaʊp	ʃaɪ	
1	62	ʃɛd	tʃaɪld	
1	63	ʃʌvəl	fɑðɚ	
1	64	ʃædo	sinɚ	
2	65	ðoŋ	ʃrʌb	
3	66	ʃelɔ	ʃɛr	
3	67	ʃugɚ	ʃʌbz	
3	68	ʃɔrt	ʃɪpɪŋ	
2	69	siləm	ʃɛrɪf	
4	70	hɑp	dʒʌmɒ	
1	71	ʃaʊtɪŋ	tʃɪkən	
1	72	ʃoldɚ	tolɚ	
2	73	tʃɛr	ʃutɪŋ	
2	74	ʒonəl	ʃʊdənt	
2	75	fɔrəg	ʃʌv	
2	76	sɛr	ʃɛlf	
4	77	kʌlɚ	zɪpɚ	
1	78	ʃɛr	tʃen	
4	79	rid	θri	
1	80	ʃaɪn	ʒaɪn	
2	81	sɑrb	ʃɑrp	
3	82	ʃʊk	ʃen	
4	83	jɛlo	plænt	
1	84	ʃælo	saʊθ	
2	85	tʃuf	ʃʊr	
1	86	ʃedi	tegi	
1	87	ʃɔrt	sɔrt	
2	88	tʃɜtʃ	sʊgɚ	
4	89	tekən	tʃeb	
3	90	ʃɛl	ʃɜt	

[ʃ] I - 3

Training Tape Leader

1	1	Push button 1
4	2	Push button 4
2	3	Push button 2
3	4	Push 3
1	5	Push 1

Listen for [ʃ]. You will hear two words. [ʃ] is at the end of the first word. Press button 1 after you hear [ʃ].

1	6	ɑʃː	ɑm	Push button 1
1	7	ɔʃ	ɔm	Push 1
1	8	dɔʃ	dɔm	1
1	9	fɛʃ	fɛm	1
1	10	ɑʃ	ɑm	1
2	11			Push button 2

Listen for [ʃ]. You will hear two words. [ʃ] is at the end of the second word. Press button 2 after you hear [ʃ].

2	12	ɑm	ɑʃː	Push button 2
2	13	ɔm	ɔʃ	Push 2
2	14	dɔm	dɔʃ	2
2	15	fɛm	fɛʃ	2
2	16	ɑm	ɑʃ	2
1	17			Push button 1

Listen for [ʃ]. You will hear two words. When [ʃ] is at the end of the second word, you will press button 2. When [ʃ] is at the end of the first word, you will press button 1.

1	18	ɑʃ	ɪp	Push 1
1	19	iʃ	ɪg	1
2	20	ɪm	ɑʃ	Push 2
2	21	ɑp	uʃ	2
2	22	ɪr	uʃ	2
1	23	uʃ	ɪd	1
1	24	ɑʃ	ɪg	1

2	25	ɛb	iʃ	2
2	26	ɛp	ɔʃ	2
1	27	ɑʃ	ol	1

Program

1	1	ɑʃ	um	
1	2	ɑʃ	in	
1	3	uʃ	ɛp	
2	4	ɛd	ɑʃ	
2	5	ɔv	ɪʃ	
1	6	iʃ	ʌdʒ	
2	7	eð	ɔɪʃ	
1	8	aɪʃ	ʌl	
2	9	æb	juʃ	
1	10	oʃ	ɝz	
1	11	wɑʃ	nig	
2	12	hɪŋ	fɪʃ	
2	13	lɑr	frɛʃ	
2	14	jɔɪv	wɪʃ	
1	15	rʌʃ	zʊk	
1	16	dɪʃ	θɪŋ	
1	17	ɪŋlɪʃ	ɝθ	
1	18	pʊʃ	hɛlp	
2	19	hæf	liʃ	
2	20	kʌlɚ	brʌʃ	
3	1			**Push button 3**
3	2			**Push 3**
3	3			**3**
3	4	ɑʃ	ɑʃ	**Push 3**
3	5	uʃ	uʃ	3
3	6	ɑʃ	uʃ	3
1	7	ɑʃ	um	1
2	8	ɑm	iʃ	2
3	9	ɑʃ	ɑʃ	3
3	10	iʃ	ɑʃ	3
2	11	ɛp	oʃ	2
1	12	iʃ	ɑg	1
3	13	oʃ	uʃ	3
3	14	ɑʃ	ɔʃ	3
3	15	uʃ	uʃ	
3	21	ɑʃ	ɑʃ	
3	22	uʃ	uʃ	
2	23	ɪm	aʊʃ	
1	24	ɛʃ	ɑrb	
2	25	ɝd	oʃ	
3	26	ɛʃ	uʃ	
3	27	ɔʃ	iʃ	
3	28	ɑʃ	ʊʃ	
1	29	eʃ	ɔɪk	
1	30	iʃ	æp	
2	31	leð	hʌʃ	
2	32	miθ	bæʃ	

1	33	bʊʃ	nuf	
2	34	pɝʒ	gæʃ	
3	35	brʌʃ	dɪʃ	
3	36	wɪʃ	blʌʃ	
3	27	dæʃ	flɛʃ	
1	38	kæʃ	rid	
1	39	wɪʃ	raɪt	
3	40	fɝnɪʃ	rʌʃ	
4	1			**Push button 4**
4	2			**Push 4**
4	3			**4**
4	4	ɑm	ɑm	**Push 4**
4	5	im	im	4
4	6	ɑm	ip	4
1	7	ɑʃ	um	1
3	8	uʃ	uʃ	3
2	9	ɪp	iʃ	2
4	10	ɪp	um	4
4	11	ɔb	in	4
4	12	un	ɛb	
3	13	ɑʃ	oʃ	3
1	14	iʃ	ʌb	1
2	15	aʊb	eʃ	2
4	16	ɪp	ɑm	4
4	17	ɔp	ɵp	
4	41	ɑm	ɑm	
4	42	ɔg	ɔg	
2	43	ʌn	aɪʃ	
4	44	jub	ɔdʒ	
3	45	æʃ	oʃ	
3	46	ɪʃ	ʊʃ	
1	47	ɛʃ	ʊrʒ	
4	48	ɔʃ	eʃ	
4	49	ɑr	iθ	
4	50	ɛz	aʊŋ	
1	51	rʌbɪʃ	pɑdʒ	
3	52	mɛʃ	flʌʃ	
2	53	lutʃ	frɛʃ	
4	54	naʊv	dɝl	
4	55	jɛr	wæŋ	
4	56	laɪk	juz	
2	57	wɔnt	ɪŋlɪʃ	
3	58	gʌʃ	æʃ	
4	59	ɛvri	grin	
1	60	kræʃ	wɪð	
2	61	maʊʒ	krʌʃ	
1	62	hæʃ	grup	
1	63	liʃ	jus	
1	64	flæʃ	kodʒ	
2	65	mɔɪtʃ	fɪnɪʃ	
3	66	læʃ	rɛlɪʃ	
3	67	pʊʃ	brʌʃ	

3	68	θræʃ	brɪtɪʃ
2	69	praʊs	wɪʃ
4	70	laɪf	hɛd
1	71	hʌʃ	hart
1	72	jɛloɪʃ	fɔrs
2	73	gɛt	gæʃ
2	74	lunɪʒ	pʌnɪʃ
2	75	relətʃ	fulɪʃ
2	76	klaɪs	flɛʃ
4	77	nɔrθ	laɪz
1	78	pʊʃ	pʊt
4	79	kʌt	dʒʌdʒ
1	80	palɪʃ	nutʃ
2	81	plæs	splæʃ
3	82	fɝnɪʃ	rædɪʃ
4	83	gəraʒ	sef
1	84	brʌʃ	græs
2	85	ˈparmɪtʃ	tarnɪʃ
1	86	frɛʃ	betʃ
1	87	rʌʃ	krɔs
2	88	watʃ	waʃ
4	89	ðɪs	plɝtʃ
3	90	fɪnɪʃ	bʊʃ

[ʃ] I - 4

Training Tape Leader

1	1	Push button 1
4	2	Push button 4
2	3	Push button 2
3	4	Push 3
1	5	Push 1

Listen for [ʃ]. You will hear two words. [ʃ] is in the middle of the first word. After you hear [ʃ], you will press button 1.

1	6	aʃa	ama	Push button 1
1	7	oʃo	omo	Push 1
1	8	aʃu	amu	1
1	9	aʃp	amp	1
1	10	eʃk	emk	1
2	11			Push button 2

Listen for [ʃ]. You will hear two words. [ʃ] is in the middle of the second word. After you hear [ʃ], you will press button 2.

2	12	ama	aʃa	Push button 2
2	13	omo	oʃo	Push 2
2	14	amu	aʃu	2
2	15	amp	aʃp	2
2	16	emk	eʃk	2
1	17			Push button 1

Listen for [ʃ]. You will hear two words. When [ʃ] is in the middle of the second word, you will press button 2. When [ʃ] is in the middle of the first word you will press button 1.

1	18	aʃa	ama	Push 1
1	19	aʃa	umə	1
2	20	ɛmə	aʃu	Push 2
2	21	ɪpe	uʃə	2
1	22	iʃe	ʌba	1
2	23	ʌru	ɛʃi	2
2	24	una	oʃa	2
1	25	oʃi	upə	1
1	26	uʃi	ɛpɛ	1
2	27	æmɛ	iʃɔ	2
1	28	aʃe	ɛgə	1

Program

1	1	aʃa	umu	
1	2	aʃa	ini	
1	3	uʃi	ɛbe	
2	4	ɛdu	aʃə	
2	5	ɔgə	ɪʃi	
1	6	iʃo	əru	
2	7	evɛ	ɔɪʃə	
1	8	aɪʃa	ʌpe	
2	9	æŋgo	juʃo	
1	10	oʃi	ɝlə	
1	11	ɪʃu	lɛnə	
2	12	lejæ	wɪʃɪŋ	
2	13	braɪðɚ	frɛʃɚ	
2	14	kɛdʒən	oʃən	
1	15	rʌʃt	luhod	
1	16	wɔʃɚ	mɛθəd	
1	17	fɪʃɪŋ	əwe	
1	18	neʃən	pepɚ	
2	19	ɪnklud	fɪnɪʃəz	
2	20	əmʌŋ	dɪʃəz	
3	1			Push button 3
3	2			Push 3
3	3			3
3	4	aʃa	aʃə	Push 3
3	5	uʃə	aʃa	3
2	6	amə	aʃə	2
1	7	uʃi	anə	1
3	8	uʃi	aʒə	3
3	9	ɨʃə	aʃɚ	3
3	10	aʃu	uʃi	3

1	11	aʃu	ɪpe	1
2	12	ɛbə	uʃɛ	2
3	13	uʃɚ	aʃi	3
3	14	uʃu	uʃi	3
3	21	aʃa	aʃa	
3	22	uʃu	uʃi	
2	23	ɪbo	aʊʃə	
1	24	ɛʃnə	arðu	
2	25	ɜno	oʃa	
3	26	ɛʃi	uʃa	
3	27	ɔʃi	iʃæ	
3	28	aʃo	ʊʃu	
1	29	eʃə	ɔɪvə	
1	30	iʃno	æθi	
2	31	ikən	neʃən	
2	32	mufəl	steʃən	
1	33	hʌʃt	redʒəm	
2	34	waʊʒɪk	ʌʃɚ	
3	35	ɪŋglɪʃmən	mæʃt	
3	36	brʌʃɪŋ	liʃəz	
3	37	palɪʃɪŋ	əʃemd	
1	38	waʃɪŋ	bɛtɚ	
1	39	ɪʃu	ɔfən	
3	40	æʃəz	blʌʃəz	
4	1			Push button 4
4	2			Push 4
4	3			4
4	4	ama	ama	Push 4
4	5	ama	apa	4
1	6	aʃə	apɔ	1
3	7	aʃi	uʃə	3
4	8	ɛgɔ	ɪpu	4
2	9	ɪge	eʃa	2
4	10	ɪkɔ	ɪge	4
4	11	ama	epi	4
3	12	aʃa	ɛʃi	3
2	13	ʌni	eʃu	2
1	14	uʃa	ɪgə	1
4	15	ɪgə	ɪmə	4
4	16	ɔne	ɔnu	4
4	41	ama	ama	
4	42	ɔzɔ	ɔzu	
2	43	ʌdaʊ	aɪʃi	
4	44	junɚ	ɔgɛ	
3	45	æʃu	oʃu	
3	46	ɪʃə	ʊʃu	
1	47	ɛʃo	ʊrʒe	
3	48	ɔʃu	eʃɚ	
4	49	amə	ɪru	
4	50	ɛle	aʊkə	
1	51	læʃɪŋ	sʌdʒli	
3	52	kræʃɪŋ	bʊʃəl	
2	53	ðɛtʃɚ	wɪʃɪŋ	

4	54	mʌnhun	dʒæpt
4	55	lijaʊ	nuləp
4	56	wɪθaʊt	bɪzi
2	57	ɪntu	pʊ§ɪŋ
3	58	wɔʃɪŋtən	flæʃəli
4	59	θaʊzənd	ɔfɚ
1	60	frɛʃən	maɪsɛlf
2	61	bɔvɪŋ	dæʃɪŋ
1	62	kʊʃən	hɛtʃɚ
1	63	ækʃən	mɛʒɚ
1	64	næʃənəl	niθəl
2	65	kaʊsən	pəzɪʃən
3	66	fɪnɪʃɪŋ	pʌnɪʃmənt
3	67	waʃɪŋ	dɪʃəz
3	68	ədɪʃən	rʌʃɪŋ
2	69	platʃɚ	brʌʃəz
4	70	gæðɚ	æftɚ
1	71	fɪʃɚmən	plɛʒɚ
1	72	bʊʃəl	bjuti
2	73	pæsɪŋ	pʊʃɪŋ
2	74	lɔʒəl	oʃən
2	75	plutɪŋ	krʌʃɪŋ
2	76	nɛtʃən	mə§in
4	77	gardən	trɛʒɚ
1	78	fulɪʃli	plæntɪŋ
4	79	əntɪl	rizən
1	80	moʃən	vaɪtʃən
2	81	ɔɪsnɚ	ʌʃɚ
3	82	hʌʃɪŋ	spɛʃəl
4	83	dʒʌdʒɪŋ	gardɪŋ
1	84	ræʃli	rɪtʃli
2	85	dənɛsɪŋ	dɪrɛkʃən
1	86	fɪnɪʃɪŋ	fɪˈngsɪŋ
1	87	neʃən	netʃɚ
2	88	kənsɪdɚ	kənˈdɪʃən
4	89	mɪstɚ	mitʃɚ
3	90	əspɛʃəli	ɪnveteʃən

[ʃ] I - 5

Training Tape Leader

1	1	Push button 1
4	2	Push button 4
2	3	Push button 2
3	4	Push 3
1	5	Push 1

Listen for [ʃ]. You will hear one word. [ʃ] is at the beginning of the word. You will press button 1 after you hear [ʃ].

1	6	ʃːə	Push button 1
1	7	ʃa	Push 1
1	8	ʃap	1
1	9	ʃup	1
3	10		Push button 3

Listen for [ʃ]. You will hear one word. [ʃ] is at the end of the word. You will press button 3 after you hear [ʃ].

3	11	aʃː	Push button 3
3	12	laʃ	Push 3
3	13	paʃ	3
3	14	pɛʃ	3
2	15		Push button 2

Listen for [ʃ]. You will hear one word. [ʃ] is in the middle of the word. You will press button 2 after you hear [ʃ].

2	16	aʃːə	Push button 2
2	17	aʃi	Push 2
2	18	aʃɪŋ	2
2	19	paʃɪŋ	2
1	20		Push button 1

You will hear one word. Listen for [ʃ]. When [ʃ] is at the end, you will press button 3. When [ʃ] is in the middle, you will press button 2. When [ʃ] is at the beginning, you will press button 1.

1	21	ʃag	Push 1
2	22	aʃi	Push 2
3	23	laʃ	Push 3
3	24	buʃ	3
1	25	ʃan	1
2	26	uʃo	2
1	27	ʃup	1
3	28	biʃ	3
2	29	iʃɪŋ	2
2	30	eʃɪŋ	2
3	31	ɔʃ	3
1	32	ʃam	1

Program

1	1	ʃam	
2	2	aʃa	
3	3	baʃ	
3	4	giʃ	
1	5	ʃen	
2	6	uʃo	
1	7	ʃadʒ	
3	8	miʃ	
2	9	ɔʃɪŋ	
2	10	iʃʌ	
3	11	fɪʃ	
2	12	ɪʃu	
2	13	eʃi	
1	14	ʃən	
2	15	ʌʃk	
1	16	ʃɔr	
3	17	brʌʃ	
1	18	ʃep	
1	19	ʃɛŋ	
3	20	plɪʃ	
2	21	wɪʃɪŋ	
3	22	pʊʃ	
1	23	ʃaʊt	
3	24	flʌʃ	
1	25	ʃɪvɚ	
1	26	ʃap	
2	27	əʃəmd	
3	28	flɛʃ	
2	29	ʌʃɚ	
3	30	palɪʃ	
4	1		Push button 4
4	2		Push 4
4	3		4
4	4	map	4
4	5	fiv	4
4	6	aʒa	4
4	31	aʒi	
4	32	bam	
4	33	paz	
3	34	trɛʃ	
1	35	ʃuf	
2	36	kʊʃən	
4	37	tʃap	
3	38	peʃ	
4	39	ætʃu	
2	40	hʌʃəz	
1	41	ʃi	
1	42	ʃʊd	
3	43	dɪʃ	
4	44	fɪt	
2	45	moʃən	
4	46	stap	
1	47	ʃʌv	
2	48	oʃʌn	
3	49	frɛʃ	
2	50	waʃɪŋ	
2	51	blʌʃəz	

3	52	rædɪʃ
1	53	ʃɑrp
4	54	sɔr
3	55	dæʃ
3	56	mɛʃ
3	57	hæʃ
4	58	læst
2	59	məʃin
1	60	ʃʊr
2	61	æʃəz
4	62	sem
3	63	hʌʃ
1	64	ʃaɪn
1	65	ʃrʌg
4	66	kɛtʃ
3	67	kæʃ
1	68	ʃɔrt
4	69	haʊs
2	70	rʌʃɪŋ
1	71	ʃɛr
4	72	fɪt
3	73	bʊʃ
4	74	mɑrtʃəz
3	75	flæʃ
2	76	ədɪʃən
3	77	pʌnɪʃ
4	78	skul
2	79	pʊʃɪŋ
1	80	ʃip
2	81	spɛʃəl
1	82	ʃæl
4	83	krɔs
4	84	plɛʒɚ
2	85	kræʃəz
4	86	ɔlso
1	87	ʃrɪŋk
4	88	pɪktʃɚ
1	89	ʃu
4	90	tʃaɪld

[ʃ] I - 6

Training Tape Leader

1	1		Push button 1
4	2		Push button 4
2	3		Push button 2
3	4		Push 3
1	5		Push 1

Listen for [ʃ]. You will hear one word. There is one [ʃ] in the word. You will press button 1 when you hear one [ʃ] in the word.

1	6	ʃːə	Push 1
1	7	ɑʃ	Push 1
1	8	ɑʃə	Push 1
1	9	ʃopɪ	1
1	10	loʃ	1
1	11	peʃɪ	1
3	12		Push button 3

Listen for [ʃ]. You will hear one word. There is more than one [ʃ] in the word. You will press button 3 when you hear two [ʃ] in the word.

3	13	ʃəˈʃo	Push 3
3	14	ˈʃoʃə	Push 3
3	15	ʃaɪʃ	Push 3
3	16	ʃonɪʃ	3
3	17	ʃeʃən	3
3	18	ʃægəʃ	3
4	19		Push button 4

Now, you will hear one word, but [ʃ] is not in the word. You will not hear [ʃ]. After you hear the word, you will press button 4.

4	20	no	Push 4
4	21	nɑp	Push 4
4	22	plem	4
4	23	mɛrp	4
1	24		Push button 1

You will hear one word. Listen for [ʃ]. When there is no [ʃ], you will press button 4. When there is more than one [ʃ], you will press button 3. When there is one [ʃ], you will press button 1.

1	25	ʃːə	Push 1
1	26	ɑʃ	1
3	27	ʃəˈʃo	Push 3
3	28	ˈʃoʃə	3
4	29	no	Push 4
4	30	nɑp	4
1	31	ɑʃə	1
1	32	ʃopɪ	1
4	33	plem	4
3	34	ʃaɪʃ	3
1	35	loʃ	1
1	36	pɛʃɪ	1
1	37	gɔʃəl	1
3	38	ʃeʃən	3

4	39	mɛrp	4
1	40	ʃi	1

Program

1	1	ʃi
1	2	ɪʃu
1	3	wɪʃ
3	4	ʃuʃaɪn
4	5	kip
3	6	ʃoʃoni
1	7	ʃʊr
4	8	brɪŋ
1	9	næʃənəl
1	10	wɔʃ
4	11	θaʊzənd
1	12	ʃʊd
1	13	ʃæl
1	14	neʃən
1	15	frɛʃ
3	16	ʃipɪʃ
1	17	ʃon
1	18	fɪʃ
4	19	mɛʒɚ
3	20	ʃɪpʃep
1	21	ækʃən
1	22	ʃɛr
4	23	tebl
3	24	ʃædfɪʃ
1	25	ʃed
4	26	tʃəɪld
1	27	fɪnɪʃ
1	28	ɪŋglɪʃ
1	29	kʌndɪʃən
4	30	əbaʊt
3	31	ʃruɪʃ
4	32	tʃɛr
1	33	ʃoldɚ
1	34	dɪrɛkʃən
4	35	sun
1	36	oʃən
3	37	ʃuʃaɪn
1	38	rʌʃ
1	39	pəzɪʃən
3	40	ʃɪpʃep
4	41	məɪsɛlf
1	42	wɔʃɪŋtən
1	43	ʃep
1	44	brɪtɪʃ
1	45	ʃʊgɚ

[ʃ] I - 7

Training Tape Leader

1	1			Push button 1
4	2			Push button 4
2	3			Push button 2
3	4			Push 3
1	5			Push 1

Listen for [ʃ]. You will hear two words. When the first word has a good [ʃ], you will press button 1. When the second word has a good [ʃ], you will press button 2.

1	6	ʃip	no	Push 1
2	7	no	ʃip	Push 2
2	8	nu	wɔʃ	2
1	9	gɔʃ	mɑrk	1
2	10	daʊn	ʌʃɚ	2
1	11	wɪʃɪng	melɚ	1
3	12			Push button 3

Listen for [ʃ]. You will hear two words. When both words have a good [ʃ], you will press button 3. When neither word has a good [ʃ], you will press button 4.

3	13	ʃip	ʃip	Push 3
3	14	ʃep	ʃip	3
4	15	no	nʌn	4
4	16	ne	nop	4
3	17	æʃ	mæʃ	3
3	18	ʌʃɚ	ɪʃu	3
1	19			Push button 1

Listen for [ʃ]. You will hear two words. When [ʃ] is in the first word, you will press button 1. When [ʃ] is in the second word, you will press button 2. When [ʃ] is in both words, you will press button 3. When [ʃ] is in neither word, you will press button 4.

1	20	ʃip	no	Push 1
2	21	no	ʃip	2
3	22	ʃip	ʃip	3
4	23	no	nʌn	4
3	24	æʃ	mæʃ	3
4	25	ne	nop	4
2	26	wɪn	wɪʃ	2
1	27	wɔʃ	wɔl	1
1	28	ʌʃɚ	ʌpɚ	1

2	29	pʊlɪŋ	pʊʃɪŋ	2
4	30	rop	rop	4
3	31	ʃɛr	ʃɛr	3
1	32	ʃi	ði	1

Program

1	1	ʃi	ði
2	2	wɪn	wɪʃ
3	3	ɪʃu	ɪʃu
4	4	dɪp	dɪp
1	5	ʃɔrt	pɔrt
3	6	ʃo	ʃo
4	7	rop	rop
2	8	væl	ʃæl
1	9	ʃʊd	kʊd
1	10	frɛʃ	frɛl
2	11	dæb	dæʃ
1	12	liʃ	lig
2	13	fɪz	fɪʃ
2	14	jɪp	ʃɪp
2	15	dʒed	ʃed
1	16	oʃən	okən
1	17	ʃɛr	fɛr
2	18	ɪŋoʃɪe	ɪŋglɪʃ
1	19	neʃən	negən
2	20	wɔmɪŋ	wɔʃɪŋ
2	21	bʊθəl	bʊʃəl
2	22	ʌfɚ	ʌʃɚ
3	23	ʃu	ʃu
3	24	rʌʃ	rʌʃ
2	25	ʒɔr	ʃɔr
2	26	pʊl	pʊʃ
2	27	dɪt	dɪʃ
1	28	ækʃən	ækzən
4	29	fɪʒɚ	fɪʒɚ
1	30	hʌʃ	hʌb
1	31	mæʃɪŋ	mætɪŋ
2	32	fɪnɪdʒ	fɪnɪʃ
2	33	tʃaʊt	ʃaʊt
1	34	kæʃ	kætʃ
2	35	blʌf	blʌʃ
3	36	brɪtɪʃ	brɪtɪʃ
2	37	sep	ʃep
2	38	ʒɑp	ʃɑp
1	39	ræʃ	ræt
3	40	æmbʊʃ	æmbʊʃ
2	41	əɟemd	əʃemd
1	42	fɪʃ	fɪt
1	43	wɪʃ	wɪs
4	44	frɛtɪŋ	swɛtɪŋ
1	45	ʃɑt	ʒɑt
1	46	læʃ	lætʃ
1	47	ʃoldɚ	soldɚ
2	48	tʃit	ʃit
1	49	krʌʃ	krʌɟ
2	50	jugɚ	ʃʊgɚ
2	51	kræzəz	kræʃəz
2	52	næɟənəl	næʃənəl
1	53	ʃʊr	sʊr
1	54	kəndɪʃən	kəndɪtʃən
4	55	litʃ	liɟ
2	56	pəzɪsən	pəzɪʃən
2	57	brʌʒ	brʌʃ
2	58	kʊtʃən	kʊʃən
1	59	flæʃəli	flæɟəli
2	60	fɜnɪs	fɜnɪʃ
1	61	ʃaɪn	taɪn
1	62	æʃ	æt
1	63	ʃut	sut
4	64	mæt	mæs
1	65	bʊʃ	bʊtʃ
4	66	tʃed	ʒed
2	67	wɔsɪŋtən	wɔʃɪŋtər
3	68	ʃɑrp	ʃɑrk
2	69	tɑp	ʃɑp
1	70	dərɛkʃən	dərɛksən
1	71	məʃin	məɟin
1	72	pɑlɪʃɚ	pɑlɪsɚ
3	73	dæʃɪŋ	dæʃəz
1	74	frɛʃ	frɛtʃ
2	75	wɑt	wɑʃ
1	76	ʃep	tʃep
2	77	tʃɔr	ʃɔr
3	78	ʌʃɚ	ɪʃu
1	79	ədɪʃən	ədɪsən
4	80	fɪnɪs	fɪnɪʒ
4	81	motʃən	moɟən
1	82	fɪʃɚmən	fɪsɚmən
2	83	netʃən	neʃən
1	84	pʌnɪʃəz	pʌnɪtʃəz
1	85	ʃʊd	ɟʊd
2	86	sæl	ʃæl
2	87	rʌs	rʌʃ
2	88	otʃən	oʃən
2	89	æksən	ækʃən
1	90	ʃu	tʃu

[ʃ] II - 1

1 mɑ
2 nɛ
3 dɔ
4 ʃɑ
5 dʒɑ
6 ʃɑ
7 ru

8 ʃu
9 ʃi
10 aɪm
11 aɪz
12 ædʒ
13 ɔʃ
14 ɑʃ
15 ɛd
16 iʃ
17 udʒ
18 aɪʃ
19 daʊ
20 ʃaʊ
21 ti
22 ʃɛ
23 ɛmɛ
24 ɑzɑ
25 adʒɑ
26 ɑʃɑ
27 odo
28 oʃo
29 oʃe
30 uzu
31 uʃɑ
32 udʒo
33 aʊz
34 ɔɪʃ
35 ɪd
36 iʃ
37 tæ
38 ʃɑ
39 ʃʌ
40 ɛdʒe
41 ɔɪʃe
42 ɔʃi
43 aɪtʃ
44 uʃ
45 ʃɛ
46 ɪs
47 ɪʒɔ
48 ʌʃ
49 uʃe
50 ʃæ

[ʃ] II - 2

1 mæ
2 nɛ
3 dɔ
4 ʃɔ
5 dɑ
6 ʃɑ
7 nu
8 ʃu
9 ʃi
10 dʒo
11 ʃo
12 ʃe
13 de
14 ʃɛ
15 ʃɛd
16 ɑm
17 un
18 id
19 iʃ
20 fɪz
21 fɪʃ
22 æz
23 æʃ
24 kæʃ
25 rʌn
26 rʌʃ
27 brʌʃ
28 dɪd
29 dɪʃ
30 wɪʃ
31 wɑʃ
32 dʒed
33 ʃed
34 jɛl
35 ʃɛl
36 ɑmɑ
37 unu
38 uzi
39 uʃi
40 ʌðɚ
41 ʌʃɚ
42 bʊtʃ
43 bʊʃi
44 bʊʃəl
45 fed
46 feʃəl
47 pʊt
48 pʊʃəz
49 odɚ
50 oʃən
51 moʃən
52 mʌd
53 mʌʃ
54 hʌʃ
55 ti
56 ʃi
57 ʃit
58 dʌz
59 æʃəz
60 mæʃ
61 mæʃɪŋ
62 məʃin

63 so
64 soz
65 ʃoz
66 ʃʊd
67 ʃʌt
68 rɛd
69 rɛʃ
70 frɛʃ
71 frɛʃɚ
72 pʊr
73 ʃʊr
74 prɛʃ
75 prɛʃɚ
76 læʃ
77 flæʃ
78 flæʃi
79 flæʃɪŋ
80 ʃɪp

[ʃ] II - 3

1 mɑ
2 dɑ
3 ʃɑ
4 ʃi
5 nɔɪ
6 ʃɔɪ
7 du
8 ʃu
9 ʃaɪ
10 ɪz
11 ɪʃ
12 fɪʃ
13 æd
14 æʃ
15 ɛdʒ
16 ɛʃ
17 mɛʃ
18 ʃip
19 ʃɪp
20 unu
21 uʃo
22 uʃɚ
23 ʌʃɚ
24 ozon
25 oʃən
26 moʃən
27 mʌʃ
28 hwɪz
29 wɪʃ
30 wɑʃ
31 du
32 ʃu
33 rʌb
34 ʃrʌb
35 pʊt
36 pʊl
37 pʊʃ
38 pʊʃt
39 dæd
40 zɪp
41 ʃɪp
42 ʃi
43 ʃin
44 maʃin
45 mæʃːŋ
46 moʃən
47 ʃʊr
48 ʃʊd
49 ɪʃ
50 nɪʃ
51 fɪnɪʃ
52 fɪnɪʃt
53 fɪʃ
54 fɪʃɚ
55 æʃ
56 bæʃ
57 bæʃfʌl
58 ʃev
59 ʃem
60 əʃem
61 əʃemd
62 ʃi
63 ʃip
64 ʃipɪʃ
65 ʃaɪ
66 ʃaɪn
67 ʃuʃaɪki
68 sʌnʃaɪn
69 eʃ
70 neʃ
71 neʃən
72 ɛʃ
73 rɛʃ
74 frɛʃ
75 frɛʃɚ
76 ʃæl
77 ʃæd
78 ʃædo
79 fɪnɪʃ
80 fɪnɪʃt

[ʃ] II - 4

1 ʃɑ
2 ʃe
3 ʃep
4 ʃept

5 ɛʃ
6 ɪʃ
7 wɪʃ
8 swɪʃ
9 swiʃt
10 æʃə
11 æʃəz
12 ræʃəz
13 ʃo
14 ʃu
15 ʃut
16 uʃo
17 ɪʃu
18 tɪʃu
19 æʃ
20 ræʃ
21 kræʃ
22 kræʃɪŋ
23 ʃæl
24 ʃælo
25 ʃæloɚ
26 rʌʃ
27 rʌʃt
28 rʌʃɪŋ
29 ʃɛd
30 ʃed
31 ʃedi
32 ʃedi tri
33 ʃaɪ
34 ʃaɪn
35 ʃeɪni
36 ʃaɪni glæs
37 pʊʃ
38 pʊʃɪŋ
39 pʊʃɪŋ hard
40 wɪʃ
41 wɪʃ fɔr
42 wɪʃ fɔr ɪt
43 ʃɔrt
44 ʃɔrtɚ
45 hiz ʃɔrtɚ
46 rɛʃ
47 frɛʃ
48 frɛʃ frut
49 brʌʃ
50 brʌʃɪŋ
51 brʌʃɪŋ hɛr
52 ʃʌn
53 neʃən
54 aʊr neʃən
55 ʃap
56 ʃapɪŋ
57 go ʃɑpɪŋ
58 fɪʃ
59 fɪʃɚ
60 fɪʃɚmən
61 ðə fɪʃɚmən
62 ʃem
63 əʃem
64 əʃemd
65 hiz əʃemd
66 waʃ
67 ju waʃ
68 ju waʃ ʌp
69 ʃʊd
70 aɪ ʃʊd
71 aɪ ʃʊd go
72 ʃɛl
73 ʃɛlf
74 ðə ʃɛlf
75 ɔn ðə ʃɛlf
76 ɪʃ
77 nɪʃ
78 fɪnɪʃ
79 fɪnɪʃt
80 jʊr fɪnɪʃt

[ʃ] II - 5

1 ʃo
2 ʃɔr
3 ʃɔrt
4 æʃ
5 læʃ
6 flæʃ
7 flæʃɪŋ
8 fɪʃ
9 fɪʃɪŋ
10 fɪʃɚ
11 ʃu
12 ʃuz
13 nu ʃuz
14 ɪʃ
15 wɪʃ
16 aɪ wɪʃ
17 fɪʃ
18 fɪʃɪŋ
19 hiz fɪʃɪŋ
20 ʃed
21 ðə ʃed
22 ɪn ðə ʃed
23 waʃ
24 waʃ ʌp
25 waʃ ʌp naʊ
26 oʃən
27 ðə oʃən
28 ðə bɪg oʃən
29 ʃɪp

30 ðə ʃɪp
31 ɔn ðə ʃɪp
32 ʃʊgɚ
33 ðə §ʊgɚ
34 ðə ʃʊgɚ bol
35 pʊʃ
36 dont pʊʃ
37 dont pʊʃ hɪm
38 kʊʃən
39 ə kʊʃən
40 ə sɔft kʊʃən
41 dɪʃ
42 ðə dɪʃ
43 waʃ ðə dɪʃ
44 ju wɑʃ ðə dɪʃ
45 ʃʊd
46 ju ʃʊd
47 ju ʃʊd ʃɛr
48 ju ʃʊd ʃɛr ɪt
49 bæʃ
50 bæʃfəl
51 ʃiz bæʃfəl
52 wɪʃ
53 ə wɪʃ
54 mek ə wɪʃ
55 ʃædo
56 maɪ ʃædo
57 maɪ ʃædoz ʃɔrt
58 fɪnɪʃ
59 fɪnɪʃ ɪt
60 ju fɪnɪʃ ɪt
61 ju ʃʊd fɪnɪʃ ɪt
62 pʊʃɪŋ
63 hiz pʊʃɪŋ
64 hiz pʊʃɪŋ ɪt
65 ʃɑrp
66 ʃɑrpən
67 ʃɑrpən ðə pɛnsəl
68 ju ʃɑrpən ðə pɛnsəl
69 ʃʌv
70 ʃʌvɪŋ
71 ʃiz ʃʌvɪŋ
72 ʃiz ʃʌvɪŋ mi
73 dɪʃəz
74 ðə dɪʃəz
75 waʃ ðə dɪʃəz
76 aɪ waʃ ðə dɪʃəz
77 frɛʃ
78 ɪts frɛʃ
79 ðæts frɛʃɚ
80 ðæts frɛʃɚ naʊ

[ʃ] II - 6

1 ʃed
2 ðə ʃed
3 ðə ʃed tri
4 wɪʃ
5 ə wɪʃ
6 mek ə wɪʃ
7 kʊʃən
8 ðə kʊʃən
9 ðə kʊʃənz bɪg
10 ʃʊd
11 hi ʃʊd
12 hi ʃʊd bi
13 hi ʃʊd bi əʃemd
14 rʌʃ
15 rʌʃɪŋ
16 ʃiz rʌʃɪŋ
17 ʃiz rʌʃɪŋ əraʊnd
18 ʃʊr
19 hiz ʃʊr
20 hiz ʃʊr əv ɪt
21 ðə ʃɑp
22 tu ðə ʃɑp
23 go tə ðə ʃɑp
24 go tə ðə ʃu ʃɑp
25 bæʃfəl
26 ʃiz vɛri bæʃfəl
27 ʃiz vɛri bæʃfəl n̩ ʃaɪ
28 fɪnɪʃ
29 fɪnɪʃ ðɛm
30 fɪnɪʃ ðə dɪʃəz
31 ʃaɪn
32 ʃaɪn jʊr ʃuz
33 jʊr ʃuz ɑr ʃaɪni
34 pʊʃəz
35 hi pʊʃəz
36 ʃiz pʊʃɪŋ
37 ʃiz pʊʃɪŋ hɑrdɚ
38 frɛʃ
39 frɛʃ frut
40 ðə frut ɪz frɛʃ
41 ðə skwaʃ ɪz frɛʃ tu
42 ðə ʃʌvəl
43 pʊʃ ðə ʃʌvəl
44 pʊʃ ðə ʃʌvəl daʊn
45 ɪts ə ʃɑrp ʃʌvəl
46 ə ʃaʊɚ
47 tek ə ʃaʊɚ
48 hi ʃʊd tek ə ʃaʊɚ
49 ʃi tʊk hɚ ʃaʊɚ
50 ðə fɪʃ
51 kætʃ ðə fɪʃ
52 ʃi kɔt ðə fɪʃ

53 ʃiz ə fɪʃəmən
54 brʌʃɪŋ
55 ʃiz brʌʃɪŋ
56 ʃiz brʌʃɪŋ hɝ hɛr
57 ʃi brʌʃəz ɪt ə lit
58 ʃælo
59 ʃælo watɚ
60 splæʃ ɪn ðə ʃælo watɚ
61 ðə ʃʊgɚ
62 ðə ʃʊgɚ bol
63 hwɛrz ðə ʃʊgɚ bol
64 ɪts ɔn ðə ʃɛlf
65 dont pʊʃ
66 pliz dont pʊʃ
67 ju ʃʊdənt pʊʃ
68 dont pʊʃ ən ʃʌv
69 palɪʃɪŋ
70 hiz palɪʃɪŋ hɪz ʃuz
71 hɪz ʃuz ar ʃaɪnd
72 hi gev ðɛm ə ʃuʃaɪn
73 ʃrʌgd
74 hi ʃrʌgd
75 hi ʃrʌgd hɪz ʃoldɚz
76 du ju ʃrʌg jʊr ʃoldɝz
77 ʃaʊtɪŋ
78 ðe wɝ ʃaʊtɪŋ
79 ðe ʃʊd hæv hʌʃt
80 bʌt ðe kɛpt ʃaʊtɪŋ

[ʃ] II - 7

1 ðə ʃɔrt kʌt
2 hi tʊk ðə ʃɔrt kʌt
3 ʃæl wi juz ðə ʃɔrt kʌt
4 aɪl ʃo ju ðə we
5 ɪts ə spɛʃəl ʃɔrt kʌt
6 ʃiz bɪzi
7 ʃiz rʌʃɪŋ əraʊnd
8 hiz rʌʃɪŋ tu
9 ðɛr traɪɪŋ tə fɪnɪʃ
10 ðe ʃʊdn̩t rʌʃ so fæst
11 ʃʌt ðɛ dɔr
12 ju ʃʌt ðə dɔr
13 jul hæv tə ʃʌv ɪt
14 aɪ traɪd tə ʃʌt ɪt
15 aɪ ʃʌvd ɪt hard
16 aɪ pʊʃt ɪt n̩ ʃʌvd ɪt
17 bʌt aɪ kʊdn̩t ʃʌt ɪt
18 ju ʃʊd bi ebəl tə ʃʌt ɪt
19 hwɛr ar maɪ ʃuz
20 ðə ʃuz ar ɔn ðə ʃɛlf
21 aɪl palɪʃ maɪ ʃuz
22 maɪ ʃuz nid ə ʃuʃaɪn
23 maɪ ʃuz wɪl bi ʃaɪni
24 aɪl palɪʃ ðəm ən brʌʃ ðəm
25 naʊ ðɛr ʃaɪniɚ ðən jʊr ʃuz
26 jʊr ʃuz nid ə ʃuʃaɪn tu
27 du ðə dɪʃəz
28 hi ʃʊd du ðə dɪʃəz
29 hi ʃʊd waʃ ðəm naʊ
30 hi ʃʊd waʃ ðə dɪʃəz
31 mek ʃʊr hi gɛts ðɛm ʃaɪni
32 dont traɪ tə rʌʃ ðə dʒab
33 jʊr splæʃɪŋ tu mʌtʃ
34 du ðə dɪʃəz kɛrfəli
35 ðel smæʃ ɪf ju drap ðɛm
36 hiz bæʃfəl
37 hiz əʃemd əv biɪŋ bæʃfəl
38 hi ʃʊdn̩t fil əʃemd
39 biɪŋ bæʃfəlz nat hɪz fɔlt
40 ʃiz rili ʃaɪ tu
41 ʃi blʌʃəz
42 ʃi wɪʃəz ʃi wʊdn̩t blʌʃ
43 bʌt ʃi blʌʃəz ɔl ðə taɪm
44 aɪm ʃʊr ɪts rʌf tə bi ʃaɪ
45 hɪrz jɚ ʃɝts
46 jɚ ʃɝts hev bən waʃt
47 ðɛr aʊt əv ðə waʃɪŋ məʃin
48 ðə ʃɝts draɪd ɪn ðə sʌnʃaɪn
49 jɚ ʃɝts go ʌp ɔn ðə ʃɛlf
50 dont dʒʌst pʊʃ ðəm ʌp ðɛr
51 ðel bi pʊʃt aʊt əv ʃep
52 pʊt ðə ʃɝts əwe naɪsli
53 hæv ɛvriθɪŋ ʃɪpʃep
54 ðɛr ʃaʊtɪŋ
55 ðɛr ʃaʊtɪŋ wail ðɛr pleɪŋ
56 lʊk ət ðəm rʌʃəraʊnd
57 ðɛr pʊʃɪŋ ən ʃʌvɪŋ tu
58 ðɛr pleɪŋ ə spɛʃəl gem
59 ðɛr rʌʃɪŋ əraʊnd ðə bʊʃəz
60 ðɛr ɪn ðə ʃɛd naʊ
61 ju kænt si ðəm ɪn ðə ʃædoz
62 ðɛr stɪl ʃaʊtɪŋ ə lat
63 ðe dont hæv tə hʌʃ
64 ɪts oke ɪf ðe ʃaʊt
65 lɛts go fɪʃɪŋ
66 hi laɪks tə go fɪʃɪŋ
67 ʃi laɪks tə go fɪʃɪŋ tu
68 ðe fɪʃ ɪn ʃælo watɚ
69 ðə fɪʃ splæʃ ɪn ðə watɚ
70 hi splæʃəz ɪn ðə watɚ tu
71 ʃi tɛlz hɪm tə ʃʌʃ
72 hi dʒʌst ʃrʌgz hɪz ʃoldɚz
73 bʌt hi juʒəli ʃʌʃəz
74 ðe go fɪʃɪŋ ə lat
75 ðɛr boθ fɪʃəmən
76 aɪ wɪʃ aɪ kʊd go fɪʃɪŋ
77 wɪr ɔlmost fɪnɪʃt
78 jul bi ɪn gʊd ʃep wɛn wɪr θru
79 wil bi fɪnɪʃt ʃɔrtli
80 naʊ jʊr fɪnɪʃt fɚ ʃʊr

[ð] BTT - 2

Listen for [ðːə]. You will hear one word. After you hear [ðːə], you will press button 1.

1	1	ðːə	Push button 1
1	2	ðə	Push 1
1	3	ʌðː	Push 1
1	4	ʌð	Push 1
1	5	ðə	1
1	6	əð	1
1	7	ɑð	1
1	8	ðɑ	1
4	9		Push button 4

Now, you will hear one word, but [ðːə] is not in the word. You will not hear [ðːə]. After you hear the word, you will press button 4.

4	10	mːʌ	Push button 4
4	11	mʌ	Push 4
4	12	ʌmː	Push 4
4	13	ʌm	Push 4
4	14	gʌ	4
4	15	ʌg	4
4	16	tɛ	4
4	17	ɔt	4
1	18		Push button 1

Listen for [ðːə]. You will hear one word. If you don't hear [ðːə], you will press button 4. When you hear [ðːə], you will press button 1.

1	19	ðːə	Push 1
1	20	ðɑ	1
1	21	ɑð	1
4	22	ɑm	Push 4
4	23	mɑ	4
4	24	mʌ	4
1	25	ðɔ	1
1	26	oð	1
4	27	nɑ	4
1	28	ið	1
4	29	ug	4
4	30	un	4
1	31	ðɛ	1
4	32	in	4
1	33	ðɑ	1

[ð] I - 1

Training Tape Leader

1	1	Push button 1
4	2	Push button 4
2	3	Push button 2
3	4	Push 3
1	5	Push 1

Listen for [ðːə]. You will hear one word. [ðːə] is in the word. You will press button 1 after you hear the word.

1	6	ðːə	Push button 1
1	7	ðɑ	Push 1
1	8	ðu	1
1	9	ɑtː	1
1	10	ɔð	1
1	11	ið	1
4	12		Push button 4

Now, you will hear one word, but [ðːə] is not in the word. You will not hear [ðːə]. You will press button 4 after you hear the word.

4	13	mːʌ	Push button 4
4	14	mɑ	Push 4
4	15	ɑm	4
4	16	gɛ	4
4	17	dʒɔ	4
4	18	ɑb	4
1	19		Push button 1

Listen for [ðːə]. You will hear one word. When [ðːə] is not in the word, you will press button 4. When [ðːə] is in the word, you will press button 1.

1	20	ðɑ	Push 1
1	21	ɑð	1
4	22	mɑ	Push 4
4	23	ɑm	4
1	24	ið	1
4	25	ig	4
4	26	gɛ	4
1	27	ðɛ	1
4	28	ɑb	4
1	29	ɔð	1
1	30	ðɑ	1

Program

1	1	ða
4	2	ka
1	3	ða
4	4	wi
4	5	te
1	6	ðu
4	7	ʃa
1	8	ði
4	9	hɔ
1	10	ði
4	11	po
4	12	mju
1	13	ðɔ
4	14	dʒɪ
4	15	ʒu
4	16	jaʊ
1	17	ðe
4	18	ga
1	19	ðu
1	20	ðɔ
4	21	wɛ
4	22	rɔ
1	23	ðaɪ
1	24	ðɛ
4	25	fɔɪ
1	26	ðɪ
1	27	ðo
4	28	bɛ
1	29	ðaʊ
4	30	zi
1	31	að
1	32	að
4	33	ak
1	34	ɛð
4	35	ʊp
1	36	oð
4	37	otʃ
4	38	is
1	39	ɛð
4	40	aɪŋ
1	41	ɔɪð
4	42	ɛn
1	43	ɛð
1	44	ɔð
1	45	æð
1	46	ɔð
4	47	ʌz
1	48	ɪð
1	49	juð
4	50	iv
4	51	ʊʒ
4	52	ɔɪm
1	53	ɛð
4	54	eθ
4	55	uʃ
4	56	ag
4	57	ut
1	58	æð
1	59	ɪð
1	60	ɜð
1	61	ða
1	62	að
4	63	di
4	64	jutʃ
1	65	tæ
4	66	væ
1	67	ɪrð
1	68	ðu
1	69	ɪð
4	70	oθ
4	71	jaɪ
1	72	ɔð
1	73	ɪð
4	74	aɪθ
4	75	ɔs
4	76	læ
1	77	ʌð
4	78	av
4	79	zu
4	80	dʒe
4	81	wɛ
1	82	að
4	83	ʊrd
4	84	nʌ
1	85	aʊð
1	86	ðɔ
4	87	aɪv
1	88	ðar
1	89	ði
1	90	ðʌ

[ð] I - 2
Training Tape Leader

1	1		Push button 1
4	2		Push button 4
2	3		Push button 2
3	4		Push 3
1	5		Push 1

Listen for: [ðːə]. You will hear two words. [ðːə] is at the beginning of the first word. You will press button 1 after you hear [ðːə].

1	6	ðːə	mʌ	Push button 1
1	7	ða	ma	Push 1

1	8	ðan	man	
1	9	ðip	mip	
1	10	ða	pɛ	
1	11	ðu	nɛ	
1	12	ða	gɔ	
2	13			Push button 2

Listen for [ð:ə]. You will hear two words. [ð:ə] is at the beginning of the second word. You will press button 2 after you hear [ð:ə].

2	14	mʌ	ð:ə	Push button 2
2	15	ma	ðɑ	Push 2
2	16	man	ðan	2
2	17	mip	ðip	2
2	18	pɛ	ðɑ	2
2	19	nɛ	ðu	2
2	20	gɔ	ðɑ	2
1	21			Push button 1

Listen for [ð:ə]. You will hear two words. When [ð:ə] is at the beginning of the second word, you will press button 2. When [ð:ə] is at the beginning of the first word, you will press button 1.

1	22	ð:ə	pi	Push 1
1	23	ˈðɛ	gɪ	1
2	24	mɪ	ðɛ	Push 2
2	25	nɪ	ðu	2
2	26	dʒɪ	ðɑ	2
2	27	dʒɑ	ðɛ	2
1	28	ðu	pɛ	1
1	29	ða	nɛ	1
1	30	ðu	gɔ	1
2	31	nɪ	ða	2
1	32	ða	mu	1

Program

1	1	ða	mu	
1	2	ða	ti	
1	3	ðu	pɛ	
2	4	hɛ	ða	
2	5	kɔ	ðɪ	
1	6	ði	rʌ	
2	7	je	ðɔɪ	
1	8	ðaɪ	lʌ	
2	9	mæ	ðu	
1	10	ðo	tɝ	
1	11	ðæn	jɔɪ	
2	12	tʃi	ðɛm	
2	13	ʃaʊn	ðoz	
2	14	sæ	ðɛr	
1	15	ðæt	hwʊp	
1	16	ðʌs	dʒar	
1	17	ðiz	gɛt	
1	18	ðe	kaɪnd	
2	19	jɛs	ðaʊ	
2	20	brɪŋ	ðɪs	
3	1			Push button 3
3	2			Push 3
3	3			3
3	4	ða	ðɑ	Push 3
3	5	ðu	ðu	3
3	6	ða	ðu	3
1	7	ða	mɪ	1
2	8	ma	ðu	2
3	9	ða	ðɑ	3
3	10	ða	ðɛ	3
3	11	ðɛ	ðɔ	3
1	12	ðɔ	nɪ	1
2	13	gi	ðo	2
3	14	ðɔ	ðɛ	3
3	15	ðɛ	ðo	3
3	16	ða	ðe	3
3	17	ðu	ðu	
3	21	ða	ðɑ	
3	22	ðu	ðu	
2	23	mɪ	ðaʊ	
1	24	ðɛ	ʒar	
2	25	nɝ	ðo	
3	26	ðɛ	ðu	
3	27	ðɔ	ði	
3	28	ða	ðʊ	
1	29	ðe	pɔɪ	
1	30	ði	hæ	
2	31	rɪ	ðɛr	
2	32	dʒɪ	ðaɪ	
1	33	ðɛn	lædʒ	
2	34	wɝn	ðo	
3	35	ði	ðɛn	
3	36	ðæn	ðiz	
3	37	ðə	ðəˈkar	
1	38	ðəˈmæn	frɛnd	
1	39	ˈtætmæn	θæŋk	
3	40	ðoz	ðəˈtri	
4	1			Push button 4
4	2			Push 4
4	3			4
4	4	ma	ma	Push 4
4	5	mɛ	mɛ	4
4	6	mɛ	ma	4
1	7	ða	nɪ	1
3	8	ða	ðu	3

2	9	gɔ	ðu	2
4	10	mɔ	nɛ	4
4	11	ni	ka	4
3	12	ðu	ðɛ	3
2	13	pɛ	ða	2
1	14	ðo	ge	1
4	15	gɛ	gɪ	4
4	16	nɪ	mɛ	4
4	17	pa	lu	
4	41	ma	ma	
4	42	ʃɔ	ʒɔ	
2	43	lʌ	ðaɪ	
4	44	bju	kɔ	
3	45	ðɛ	ðo	
3	46	ðɪ	ðʊ	
1	47	ðɛ	zʊr	
3	48	ðɔ	ðe	
4	49	ʒa	ji	
4	50	tʃɛ	raʊ	
1	51	ðɪs	nɛp	
3	52	ðə ˈrum	ðɛræt	
2	53	θɛnən	ðed ˈgo	
4	54	ðætʃ	sɔɪp	
4	55	luŋ	gɜf	
4	56	wet	dʒok	
2	57	zu	ðə ˈki	
3	58	ðɛl ˈkʌm	ˈtɛrbaɪ	
4	59	hæt	faɪv	
1	60	ðə ˈhaʊs	biˈkʌm	
2	61	ˈtʃeləg	ðiz ˈtu	
1	62	ðə ˈkʌp	vɛri	
1	63	ðoz ˈpipl	ˈtekən	
1	64	ðə ˈarmi	də ˈmaɪm	
2	65	ʒɔɪl	ˈðɪs wən	
3	66	ðev ˈgan	ðel ˈkʌm	
3	67	ˈðætwən	ðoz ˈmɛn	
3	68	ˈðɛrzmaɪn	ðɛmsɛlvz	
2	69	vaʊˈtin	ðɛl ˈste	
4	70	sɪŋɪŋ	fæməli	
1	71	ˈðeɚhɪr	ˈθɝd laɪn	
1	72	ðæts ˈraɪt	tuˈde	
2	73	daktɚ kʌmz	ðɛr hi goz	
2	74	zɔrmɔɪ	ðɪs ˈtaɪ	
2	75	vutənme	ðe sɔ ɪt	
2	76	dalən	ðɛn maɪn	
4	77	riˈmen	dʒʌmp ʌp	
1	78	taɪsɛlf	θaʊzənd	
4	79	biˈkɔz	ˈrɛdi naʊ	
1	80	ðɛr goɪŋ	daʊʒ dən	
2	81	vipənɚ	ðə pepɚ	
3	82	ðə ˈmun	ˈtɜfɔr	
4	83	sɜvəs	falo	
1	84	ðɪs pɛr	zɪpɚ	
2	85	vaʊnli	ðə ˈtaʊn	
1	86	ˈðɪs mɪnət	θəmunɚ	
1	87	ðe ræn	dont go	
2	88	vɛri gʊd	ðeɚ kʌmɪŋ	
4	89	zalənti	dalɚ bɪl	
3	90	ðe wɛnt	ðæts ɔl	

[ð] I - 3

Training Tape Leader

1	1	Push button 1
4	2	Push button 4
2	3	Push button 2
3	4	Push 3
1	5	Push 1

Listen for [að:]. You will hear two words. [að:] is at the end of the first word. Press button 1 after you hear [að:].

1	6	að:	am	Push button 1
1	7	ɔð	ɔm	Push 1
1	8	bɔð	bɔm	1
1	9	fið	fim	1
1	10	að	am	1
2	11			Push button 2

Listen for [að:]. You will hear two words. [að:] is at the end of the second word. Press button 2 after you hear [að:].

2	12	am	að:	Push button 2
2	13	ɔm	ɔð	Push 2
2	14	bɔm	bɔð	2
2	15	fim	fið	2
2	16	am	að	2
1	17			Push button 1

Listen for [að:]. You will hear two words. When [að:] is at the end of the second word, you will press button 2. When [að:] is at the end of the first word, you will press button 1.

1	18	að	ɪp	Push 1
1	19	ið	ɪg	1
2	20	ɪm	að	Push 2
2	21	ap	uð	2
2	22	ɪr	uð	2
1	23	uð	ɪdʒ	1
1	24	að	ɪg	1
2	25	ɛb	ið	2
2	26	ɛp	ɔð	2
1	27	að	ol	1

Program

1	1	ɑð	um	
1	2	ɑð	im	
1	3	uð	ɛk	
2	4	ɛʃ	ɑð	
2	5	ɔs	ɪð	
1	6	ið	ʌdʒ	
2	7	eʒ	ɔɪð	
1	8	aɪð	ʌg	
2	9	æb	juð	
1	10	oð	ɜt	
1	11	wɪð	kɑs	
2	12	gɔʃ	beð	
2	13	klɪm	kloð	
2	14	ʃub	rið	
1	15	maʊð	midʒ	
1	16	brið	fʊt	
1	17	smuð	hom	
1	18	taɪð	wɔl	
2	19	sɪks	sið	
2	20	tɛl	leð	
3	1			Push button 3
3	2			Push 3
3	3			3
3	4	ɑð	ɑð	Push 3
3	5	uð	uð	3
3	6	ɑð	uð	3
1	7	ɑð	um	1
2	8	ɑm	ið	2
3	9	ɑð	ɑð	3
3	10	ið	ɑð	3
2	11	ɛp	oð	2
1	12	ið	æg	1
3	13	oð	uð	3
3	14	ɑð	əð	3
3	15	uð	uð	
3	21	ɑð	ɑð	
3	22	uð	uð	
2	23	ɪk	aʊð	
1	24	ɛð	ɑrdʒ	
2	25	ɜt	oð	
3	26	ɛð	uð	
3	27	ɔð	ið	
3	28	ɑð	ʊð	
1	29	eð	ɔɪʃ	
1	30	ið	æp	
2	31	gɪn	wɪð	
2	32	nitʃ	brið	
1	33	suð	buf	
2	34	weg	skeð	
3	35	taɪð	taɪð	
3	36	wɪð	wɪð	
3	37	smuð	smuð	
1	38	sið	nit	
1	39	beð	mek	
3	40	maʊð	rið	
4	1			Push button 4
4	2			Push 4
4	3			4
4	4	ɑm	ɑm	Push 4
4	5	im	im	4
4	6	ɑm	ip	4
1	7	ɑð	um	1
3	8	uð	uð	3
2	9	ip	ið	2
4	10	ɪp	um	4
4	11	ɔb	in	4
4	12	un	ɛb	
3	13	ɑð	oð	3
1	14	ið	ʌb	1
2	15	ɔb	ɛð	2
4	16	ɪp	ɑm	4
4	17	ɔp	ɔp	
4	41	ɑm	ɑm	
4	42	ɔb	ɔb	
2	43	ʌg	aɪð	
4	44	juf	ɔʃ	
3	45	æð	oð	
3	46	ɪð	ʊð	
1	47	ɛð	urθ	
3	48	ɔð	eð	
4	49	ɑʒ	ip	
4	50	ɛʃ	aʊz	
1	51	laɪð	haɪθ	
3	52	skeð	sið	
2	53	koz	loð	
4	54	dʒɪŋ	gɜf	
4	55	kɑθ	ʃɑm	
4	56	dɪd	drɛs	
2	57	wev	beð	
3	58	kloð	maʊð	
4	59	rid	lɑrdʒ	
1	60	ʃið	bin	
2	61	gɔv	suð	
1	62	tið	biz	
1	63	loð	kɔf	
1	64	skeð	gretʃ	
2	65	slaɪv	laɪð	
3	66	lɛð	smuð	
3	67	fɑð	ʃið	
3	68	wɪð	kloð	
2	69	tɑθ	maʊð	
4	70	gev	fes	
1	71	raɪð	tʃaɪld	
1	72	suð	fud	
2	73	plez	beð	
2	74	tɪv	tið	

2	75	rɑð	laɪð
2	76	miz	ʃið
4	77	lʌv	sɛɪd
1	78	rið	tʃif
4	79	faɪv	lid
1	80	leð	bed
2	81	paɪð	raɪð
3	82	sið	brið
4	83	tʃif	ren
1	84	taɪð	saɪn
2	85	tev	leð
1	86	brið	prɛd
1	87	ʍɪð	faɪn
2	88	ʃuz	smuð
4	89	əbʌv	kuθ
3	90	suð	beð

[ð] I - 4

Training Tape Leader

1	1	Push button 1
4	2	Push button 4
2	3	Push button 2
3	4	Push 3
1	5	Push 1

Listen for [ð:ɑ]. You will hear two words. [ð:ɑ] is in the middle of the first word. You will press button 1 after you hear [ð:ɑ].

1	1	ɑðɑ	ɑmɑ	Push button 1
1	2	oðo	omo	Push 1
1	3	ɑðu	ɑmu	1
1	4	ɑði	ɑmp	1
1	5	eðɑ	emɑ	1
2	6			Push button 2

Listen for [ð:ɑ]. You will hear two words. [ð:ɑ] is in the middle of the second word. You will press button 2 after you hear [ð:ɑ].

2	7	ɑmɑ	ɑðɑ	Push button 2
2	8	omo	oðo	Push 2
2	9	ɑmu	ɑðu	2
2	10	ɑmp	ɑði	2
2	11	emɑ	eðɑ	2
1	12			Push button 1

Listen for [ð:ɑ]. You will hear two words. When [ð:ɑ] is in the middle of the second word, you will press button 2. When [ð:ɑ] is in the middle of the first word, you will press button 1.

1	13	ɑðɑ	ɑmu	Push 1
1	14	ɑðɑ	umə	1
2	15	ɛmə	ɑðu	Push 2
2	16	ɪpe	uðə	2
1	17	iðe	ʌbɑ	1
2	18	ʌru	ɛði	2
2	19	unɑ	oðɑ	2
1	20	oði	upə	1
1	21	uði	ɛpɛ	1
2	22	æmɛ	iðɔ	2
1	23	ɑðɑ	ɛgə	

Program

1	1	ɑðɑ	umu	
1	2	ɑˈðɑ	imi	
1	3	uðe	ɛke	
2	4	ɛˈʃɔ	ɑðɚ	
2	5	ɔse	ɪðz	
1	6	iðe	ˈʌdɛʌ	
2	7	ezo	ɔɪðə	
1	8	aɪðɪ	ʌgi	
2	9	æbə	juðə	
1	10	oðɔ	ɜtɑ	
1	11	ʌðɚ	aɪʃi	
2	12	pɑmɚ	fɑðɚ	
2	13	fɔtɪ	kloðɪŋ	
2	14	inɑr	iðɚ	
1	15	gæðɚ	gebo	
1	16	bɑðɚ	bifɔr	
1	17	mʌðɚz	meks	
1	18	bɑðɚɪŋ	hɑlɚɪŋ	
2	19	bɜnɪŋ	beðɪŋ	
2	20	ænsɚ	ənʌðɚ	
3	1			Push button 3
3	2			Push 3
3	3			3
3	4	ɑðə	ɑðə	Push 3
3	5	uðə	ɑðə	3
2	6	ɑmə	ɑðə	2
1	7	uði	ɑgə	1
3	8	uði	ɑðə	3
3	9	iðə	ɑðɚ	3
3	10	ɑðu	uði	3
1	11	ɑðu	ɪpe	1
2	12	ɛbə	uðe	2
3	13	uðɚ	ɑði	3
3	14	uðu	uði	3

3	21	aðə	aðə	
3	22	uði	uði	
2	23	ɪki	aʊðe	
1	24	ɛðɚ	ardʒo	
2	25	ɜtɪŋ	oðɪŋ	
3	26	ɛðe	uðɔ	
3	27	ɔðu	iðʌ	
3	28	ɑðɔɪ	ʊðe	
1	29	eðəm	ɔɪfu	
1	30	iðz	ɑpe	
2	31	bɪnɚ	wɛðɚ	
2	32	skufɪ	suðɪŋ	
1	33	nɔrðɚn	nizɚ	
2	34	fɛʃo	fɛðɚ	
3	35	niðɚ	niðɚ	
3	36	loðz	loðz	
3	37	tiðɪŋ	tiðɪŋ	
1	38	brʌðɚ	brekɚ	
1	39	briðɪŋ	pleθɪŋ	
3	40	ræðɚ	ræðɚ	
4	1			Push button 4
4	2			Push 4
4	3			4
4	4	ɑmə	ɑmə	Push 4
4	5	ɑmə	ɑpə	4
1	6	ɑðə	ɑpɔ	1
3	7	ɑði	uðə	3
4	8	ɛbɔ	ɪpu	4
2	9	ɪge	eðə	2
4	10	ɪkɔ	ɪge	4
4	11	ɑmə	ɛpi	4
3	12	ɑðə	ɛði	3
2	13	ʌbi	eðu	2
1	14	uðɑ	ɪgə	1
4	15	ɪgə	ɪmə	4
4	16	ɔne	ɔnu	4
4	41	ɑmə	ɑmə	
4	42	ɔbe	ɔbi	
2	43	ʌgɚ	aɪðe	
4	44	jufo	ɔzɪŋ	
3	45	æðɚ	oðɪŋ	
3	46	ɪði	ʊðe	
1	47	ɛðɚ	ʊrθe	
3	48	ɔʒən	ɛðəl	
4	49	ɑʒəm	ɛpʃu	
4	50	ɛʃəl	aʊzaɪ	
1	51	fɜðɚ	fɔrvɚ	
3	52	mʌðɚ	fɑðɚ	
2	53	klɑdz	kloðz	
4	54	ʌvɚ	gæfɚ	
4	55	kliθɪŋ	sɔvɚ	
4	56	lɪvɪŋ	luzɪŋ	
2	57	tude	tugɛðɚ	

3	58	iðɚ	lɛðɚ
4	59	boθ	sɛvən
1	60	læðɚ	lædɚ
2	61	sʌzɚn	sʌðɚn
1	62	beðɪŋ	bebɪ
1	63	brʌðɚz	brokən
1	64	ənʌðɚ	grevɚ
2	65	'ɔldo	ɔlðo
3	66	læðɚ	wɛðɚ
3	67	briðɪŋ	brʌðɚ
3	68	riðəm	rɪðəm
2	69	gævɚ	gæðɚ
4	70	ɛnɪθɪŋ	gɑrdɛn
1	71	briðɪŋ	brizɪ
1	72	fɑðɚ	fɑrmɚ
2	73	wɪndo	wɪðɚ
2	74	nɑsɚ	nɔrðɚn
2	75	ivɚ	iðɚ
2	76	gɛdɪŋ	gæðɚd
4	77	ɛnɪθɪŋ	lezɪ
1	78	lɛðɚ	lɛtɚ
4	79	fevɚ	sʌmθɪŋ
1	80	fɜðɚ	fezɚ
2	81	klɑdɪŋ	kloðɪŋ
3	82	bɑðɚ	briðz
4	83	kændɪ	hɛlθɪ
1	84	suðɪŋ	sevɪŋ
2	85	ɔpθi	ɔlðo
1	86	taɪðɪŋ	tevɪŋ
1	87	wɪðɚ	waɪzɚ
2	88	fɛlt	fɛðɚ
4	39	wudɚ	hɛvən
3	90	brʌðɚz	sʌðɚn

[ð] I - 5

Training Tape Leader

1	1		Push button 1
4	2		Push button 4
2	3		Push button 2
3	4		Push 3
1	5		Push 1

Listen for [ð:ə]. You will hear one word. [ð:ə] is at the beginning of the word. You will press butt[illegible] 1 after you hear [ð:ə].

1	6	ð:ə	Push button 1
1	7	ðɑ	Push 1
1	8	ðɑp	1
1	9	ðup	1
3	10		Push button 3

Listen for [að:]. You will hear one word. [að:] is at the end of the word. You will press button 3 after you hear [að:].

3	11	að:	Push button 3
3	12	sað	Push 3
3	13	kað	3
3	14	kɛð	3
2	15		Push button 2

Listen for [ð:ə]. You will hear one word. [ð:ə] is in the middle of the word. You will press button 2 after you hear [ð:ə].

2	16	að:ə	Push button 2
2	17	aði	Push 2
2	18	aðu	2
2	19	paðɚ	2
1	20		Push button 1

You will hear one word. Listen for [ð:ə]. When [ð:ə] is at the end, you will press button 3. When [ð:ə] is in the middle, you will press button 2. When [ð:ə] is at the beginning, you will press button 1.

1	21	ðak	Push 1
2	22	aði	Push 2
3	23	sað	Push 3
3	24	ʃuð	3
1	25	ðap	1
2	26	uðo	2
1	27	ðup	1
3	28	mið	3
2	29	uði	2
2	30	uðɚ	2
3	31	ɔð	3
1	32	ðak	1

Program

1	1	ðak	
2	2	aðu	
3	3	mað	
3	4	bið	
1	5	ðep	
2	6	uðɚ	
1	7	ðatʃ	
3	8	lið	
2	9	ɔðəl	
2	10	iðəb	
3	11	wɪð	
2	12	iðɚ	
2	13	paðəl	
1	14	ðɛk	
2	15	seðɪp	
1	16	ðɛr	
3	17	maʊð	
1	18	ðæt	
1	19	ðaɪs	
3	20	hɛð	
2	21	ʌðɚ	
3	22	beð	
1	23	ðʌs	
3	24	smuð	
1	25	ðɛm	
1	26	ðæn	
2	27	mʌðɚ	
3	28	tið	
2	29	ræðɚ	
3	30	kloð	
4	1		Push button 4
4	2		Push 4
4	3		4
4	4	map	4
4	5	ʃeb	4
4	6	ote	4
4	31	abi	
4	32	padʒ	
4	33	gran	
3	34	sɛð	
1	35	ðum	
2	36	wɛðɚ	
4	37	tʃɛr	
3	38	jɛð	
4	39	kusən	
2	40	brʌðɚ	
1	41	ðo	
1	42	ðɛn	
3	43	leð	
4	44	pliz	
2	45	gæðɚ	
4	46	faɪt	
1	47	ðe	
2	48	ɔlðo	
3	49	brið	
2	50	niðɚ	
2	51	faðɚ	
3	52	taɪð	
1	53	ðɛr	
4	54	θɔt	
3	55	suð	

3	56	raɪð
3	57	loð
4	58	gardən
2	59	təgɛðɚ
1	60	ðɛrfɔr
2	61	iðɚ
4	62	vɔɪs
3	63	ʃið
1	64	ðiz
1	65	ðæn
4	66	hɪz
3	67	maʊð
1	68	ðɛn
4	69	laɪf
2	70	baðɚ
1	71	ðæt
4	72	gev
3	73	skeð
4	74	ɛniθɪŋ
3	75	rið
2	76	nɔrðən
3	77	laɪð
4	78	daktɚ
2	79	brʌðɚz
1	80	ði
2	81	wɪðɚ
1	82	ðɛm
4	83	faɪv
4	84	mɪdəl
2	85	ənʌðɚ
4	86	wɪndo
1	87	ðɪs
4	88	nɛvɚ
1	89	ðɛrfɔr
4	90	θɔt

[ð] I - 6

Training Tape Leader

1	1		Push button 1
4	2		Push button 4
2	3		Push button 2
3	4		Push 3
1	5		Push 1

Listen for [ð:ə]. You will hear one word. There is one [ð:ə] in the word. You will press button 1 when you hear [ð:ə] in the word.

1	6	ð:ə	Push 1
1	7	að	Push 1
1	8	aðə	Push 1
1	9	ðopɪ	1
1	10	kʌðɚ	1
1	11	peð	1
3	12		Push button 3

Listen for [ð:ə]. You will hear one word. There is more than one [ð:ə] in the word. You will press button 3 when you hear two [ð:ə] in the word.

3	13	ðəˈðo	Push 3
3	14	ˈðoðə	Push 3
3	15	ˈtaɪðu	Push 3
3	16	ðuðo	3
3	17	ðakðə	3
3	18	ðiðən	3
4	19		Push button 4

Now you will hear one word, but [ð:ə] is not in the word. You will not hear [ð:ə]. After you hear the word, you will press button 4.

4	20	no	Push 4
4	21	nak	Push 4
4	22	spem	4
4	23	mɜp	4
1	24		Push button 1

You will hear one word. Listen for [ð:ə]. When there is no [ð:ə], you will press button 4. When there is more than one [ð:ə], you will press button 3. When there is one [ð:ə], you will press button 1.

1	25	ð:ə	Push 1
1	26	að	1
3	27	ðəˈðo	Push 3
3	28	ˈðoðə	3
4	29	no	Push 4
4	30	nak	4
1	31	aðə	1
1	32	ðopɪ	1
4	33	spem	4
3	34	ðaɪðu	3
1	35	kʌðɚ	1
1	36	ðep	1
1	37	sað	1
3	38	ðiðən	3
4	39	mɜp	4
1	40	ðe	1

Program

1	1	ðe
1	2	ʌðɚ
1	3	wɪð
3	4	ðiðu
4	5	no
3	6	ðʌɱʌðɚ
1	7	ðɛr
4	8	ɔfən
1	9	gæðɚ
1	10	maʊð
4	11	mʌnθ
1	12	ðo
1	13	bɑðɚ
1	14	brið
1	15	ðiz
3	16	ðætð̥ɜr
1	17	kloðɪŋ
1	18	smuð
4	19	muvz
3	20	ðɪðɚ
1	21	ðɛn
1	22	iðɚ
4	23	briz
3	24	ðɛrð̥ɛr
1	25	beð
4	26	θɪŋk
1	27	ðæt
1	28	wɛðɚ
1	29	ʃið
4	30	liv
3	31	ðæts ð̥ɛm
4	32	brif
1	33	ðɪs
1	34	sʌðɜn
4	35	sʌdɛn
1	36	suð
3	37	ðə f̥ɑðɚ
1	38	ðaʊ
1	39	fɛðɚ
3	40	ðɛr ð̥ɛn
4	41	wev
1	42	leð
1	43	ðoz
1	44	ʌðɚ ʍaɪz
1	45	smuð

[ð] I - 7

Training Tape Leader

1	1			Push button 1
4	2			Push button 4
2	3			Push button 2
3	4			Push 3
1	5			Push 1

Listen for [ð:ə]. You will hear two words. When the first word has a good [ðə], you will press button 1. When the second word has a good [ðə], you will press button 2.

1	6	ðɛm	no	Push 1
2	7	no	ðɛm	Push 2
2	8	nu	sið	2
1	9	tið	taʊn	1
2	10	kaɪt	ʌðɚ	2
1	11	fɑðɚ	lemɚ	1
3	12			Push button 3

Listen for [ðə]. You will hear two words. When both words have a good [ðə], you will press button 3. When neither word has a good [ðə], you will press button 4.

3	13	ðɛm	ðɛm	Push 3
3	14	ðɛr	ðɛm	3
4	15	no	nʌn	4
4	16	ne	nɑt	4
3	17	sið	sið	3
3	18	sið	suð	3
1	19			Push button 1

Listen for [ð:ə]. You will hear two words. When [ðə] is in the first word, you will press button 1. When [ðə] is in the second word, you will press button 2. When [ðə] is in both words, you will press button 3. When [ðə] is in neither word, you will press button 4.

1	20	ðɛm	no	Push 1
2	21	no	ðɛm	2
3	22	ðɛm	ðɛm	3
4	23	no	nʌn	4
3	24	sið	suð	3
4	25	ne	nɑt	4
2	26	maʊs	maʊð	2
1	27	wɪð	wɪtʃ	1
1	28	ʌðɚ	ʌpɚ	1
2	29	bɑmɚ	bɑðɚ	2
4	30	rop	nop	4
3	31	ðɛr	ðɛr	3
1	32	ðæn	mæn	1

Program

1	1	ðæn	mæn
2	2	wɪp	wɪð
3	3	iðɚ	iðɚ
4	4	let	let
1	5	ðɛr	tʃɛr
3	6	ðiz	ðiz
4	7	dʒʌst	dʒʌst
2	8	no	ðo
1	9	ðɛm	sɛm
1	10	maʊð	maʊf
2	11	tib	tið
1	12	smuð	smuʒ
2	13	taɪg	taɪð
2	14	ʃoz	ðoz
2	15	hʌs	ðʌs
1	16	fɑðɚ	fɑtɚ
1	17	ðæt	kæt
2	18	beʒ	beð
1	19	bɑðɚ	bɑnɚ
2	20	ʌpɚ	ʌðɚ
2	21	mʌfɚ	mʌðɚ
2	22	ræːnɚ	ræðɚ
3	23	ðe	ðe
3	24	raɪð	raɪð
2	25	θɔt	ðɛn
2	26	sut	suð
2	27	ʃiz	ʃið
1	28	wɛðɚ	wɛtʃɚ
4	29	raɪzɚ	raɪzɚ
1	30	brið	brɪŋ
1	31	wɪðɪn	wɪdɪn
2	32	leb	leð
2	33	vɪs	ðɪs
1	34	skeð	skef
2	35	kloθ	kloð
3	36	sið	sið
2	37	vaʊ	ðaʊ
2	38	fi	ði
1	39	leð	lez
3	40	laɪð	laɪð
2	41	ənʌdɚ	ənʌðɚ
1	42	loð	los
1	43	rið	biθ
4	44	lædɚ	lædɚ
1	45	ðɛrfɔr	bɛrfɔr
1	46	beð	bev
1	47	ðæn	dæn
2	48	ʃe	ðe
1	49	suð	suθ
2	50	zɛr	ðɛr
2	51	gædɚ	gæðɚ
2	52	nidʒɚ	niðɚ
1	53	ðæt	væt
1	54	nɔrðən	nɔrvən
4	55	ʃiv	ʃiv
2	56	fɜzɚ	fɜðɚ
2	57	maʊv	maʊð
2	58	ɔldo	ɔlðo
1	59	brʌðɚ	brʌɪɚ
2	60	raɪz	raɪð
1	61	ðʌs	θʌs
1	62	skeð	sked
1	63	ðo	do
4	64	smud	smuθ
1	65	tið	tiz
4	66	zoɪ	doz
2	67	wɪvəʊt	wɪðaʊt
3	68	ðɛrfor	ðɛrɪn
2	69	væn	ðæn
1	70	kloðɪŋ	kloθɪŋ
1	71	hɛðɚ	hɛvɚ
1	72	rɪðəm	rɪvəm
3	73	iðɚ	niðɚ
1	74	brið	briθ
2	75	taɪd	taɪð
1	76	taʊ	daʊ
2	77	vɛm	ðɛm
3	78	fɛðɚ	fɑðɚ
1	79	lɛðɚ	lɛvɚ
4	80	rid	riθ
4	81	fɛvɚ	fɛzɚ
1	82	wɪðɚ	wɪdɚ
2	83	bɑvɚ	bɑðɚ
1	84	tugɛðɚ	tugɛvɚ
1	85	ðɛn	dɛn
2	86	θɪs	ðɪs
2	87	siv	sið
2	88	lædɚ	læʒɚ
2	89	fɜvɚ	fɜðɚ
1	90	ðiz	θiz

[ð] II - 1

1	mɑ
2	nɛ
3	bɔ
4	ðɑ
5	lɑ
6	ðɑ
7	nu
8	ðu
9	ði
10	aɪm
11	aɪn
12	ɑg
13	ɔð

14 að
15 ɛb
16 ið
17 un
18 aɪð
19 ʃaʊ
20 ðaʊ
21 ki
22 ðɛ
23 ɛmɛ
24 ɑnɑ
25 ɑbɑ
26 ɑðɑ
27 opo
28 oðo
29 oðe
30 unu
31 uðɑ
32 uto
33 aʊn
34 ɔɪð
35 ɪs
36 ið
37 dæ
38 ðɑ
39 ðʌ
40 ɛte
41 ɔɪðe
42 ɔði
43 aɪv
44 uð
45 ðɛ
46 θaɪ
47 ɪðɔ
48 ʌð
49 ʊðe
50 ðæ

[ð] II - 2

1 mɑ
2 nɛ
3 sɔ
4 ðɑ
5 tʃɔɪ
6 ðe
7 nu
8 ði
9 ðo
10 maɪ
11 ðo
12 ðe
13 pe
14 ðɛ
15 ðɛr
16 ɑm
17 un
18 is
19 ið
20 bek
21 beð
22 raɪt
23 rið
24 brið
25 ʃi
26 ʃið
27 sið
28 wɪt
29 wɪð
30 aʊð
31 maʊð
32 iz
33 ðiz
34 ʌs
35 ðʌs
36 ɑmɑ
37 unu
38 ɛti
39 ɑðɑ
40 ɔlo
41 ɔlðo
42 mʌst
43 mʌðɚ
44 ʌðɚ
45 nitɚ
46 niðɚ
47 fɔt
48 fɑðɚ
49 wɛt
50 wɛðɚ
51 hwɛðɚ
52 rid
53 rið
54 brið
55 ɛr
56 ðɛr
57 ðɛn
58 gɛt
59 gɛðɚ
60 ʌð
61 ʌðɚ
62 brʌðɚ
63 vɛri
64 ɪs
65 ðɪs
66 ðiz
67 ðoz

68 dez
69 eð
70 beð
71 beðz
72 hæv
73 ðo
74 ɔlðo
75 loð
76 æð
77 ræð
78 ræðɚ
79 iðɚ
80 ðæt

[ð] II - 3

1 ma
2 ta
3 ða
4 ðo
5 so
6 ðu
7 laɪ
8 ðaɪ
9 ðaʊ
10 it
11 ið
12 tið
13 wɪt
14 wɪð
15 lo
16 loð
17 kloð
18 ðʌ
19 ðʌs
20 ata
21 ʌðɚ
22 mʌðɚ
23 mʌðɚz
24 ræt
25 ræðɚ
26 læðɚ
27 læð
28 leð
29 loð
30 si
31 ði
32 se
33 ðe
34 be
35 beð
36 beðɚ
37 ɛr
38 bɛr
39 ðɛr
40 de
41 ðe
42 ðel
43 ðo
44 ðoz
45 ɔlðo
46 ʌðɚ
47 brʌðɚ
48 ənʌðɚ
49 ið
50 tið
51 rið
52 brið
53 iðɚ
54 niðɚ
55 ɑrð
56 fɑrð
57 fɑrðɚ
58 fɛðɚ
59 lɛðɚ
60 gɛðɚ
61 təgɛðɚ
62 ðɪs
63 ðæt
64 ðæn
65 wɪð
66 wɪðɪn
67 wɪðaʊt
68 ɑð
69 fɑð
70 fɑðɚ
71 bɑðɚ
72 ðɛr
73 ðɛn
74 ðe
75 ðed
76 ðev
77 beð
78 beðɪŋ
79 ðə
80 ðə ɛnd

[ð] II - 4

1 ða
2 ðɛ
3 ðɛr
4 ðɛrz
5 ɛð
6 oð
7 loð
8 kloð
9 kloðɪŋ

10 iðɚ
11 riðɚ
12 briðɚ
13 ðɛ
14 ðæ
15 ðæn
16 æðɚ
17 ʌðɚ
18 mʌðɚ
19 ið
20 rið
21 brið
22 briðɪŋ
23 ðɛr
24 ðɛrfɔr
25 ðɛrbaɪ
26 brið
27 briðɪŋ
28 brʌðɚ
29 ðɛr
30 ðɛn
31 ðæ
32 ðæt
33 ðæt wʌn
34 iðɚ
35 ʌðɚ
36 ənʌðɚ
37 ənʌðɚ wʌn
38 eð
39 beð
40 beðɪŋ
41 aɪm beðɪŋ
42 iðɚ
43 niðɚ
44 niðɚ wɝd
45 ðæt
46 ðæts
47 ðæts gʊd
48 kloð
49 kloðɪŋ
50 aʊr kloðɪŋ
51 brið
52 briðɪŋ
53 kip briðɪŋ
54 ðɛr
55 ɪn ðɛr
56 go ɪn ðɛr
57 tið
58 tiðɪŋ
59 tiðɪŋ rɪŋ
60 ðæ
61 ðæt
62 du ðæt
63 du ðæt naʊ
64 ðoz
65 gɛt ðoz
66 ju gɛt ðoz
67 wɪð
68 kʌm wɪð
69 kʌm wɪð mi
70 mʌðɚ
71 mʌðɚz
72 mʌðəz hom
73 maɪ mʌðɚz hom
74 ðɪs
75 se ðɪs
76 ju se ðɪs
77 ʌðɚ
78 ənʌðɚ
79 du ənʌðɚ
80 du ənʌðɚ wʌn

[ð] II - 5

1 ðɛn
2 ðɛr
3 ðɛrz
4 rið
5 brið
6 iðɚ
7 niðɚ
8 brið
9 briðɪŋ
10 briðɚ
11 ði
12 ðiz
13 ðiz tu
14 sið
15 iðɚ
16 iðɚ wʌn
17 suð
18 suðɪŋ
19 ɪts suðɪŋ
20 ðɪs
21 du ðɪs
22 ju du ðɪs
23 beð
24 go beð
25 go beð naʊ
26 mʌðɚ
27 maɪ mʌðɚ
28 ʃiz maɪ mʌðɚ
29 lɛðɚ
30 lɛðɚ bɛlt
31 blæk lɛðɚ bɛlt
32 ðiz
33 gɛt ðiz
34 aɪ gɛt ðiz

35 fɛðɚ
36 maɪ fɛðɚ
37 maɪ rɛd fɛðɚ
38 ðe
39 ɑr ðe
40 hwɛr ɑr ðe
41 smuð
42 ril smuð
43 ɪts ril smuð
44 ɪts ril smuð naʊ
45 ðɪs
46 ðɪs wʌn
47 ðɪs ɔr ðæt
48 ɪts ðɪs ɔr ðæt
49 rið
50 iðɚ
51 iðɚ θɪŋ
52 ʌðɚ
53 ənʌðɚ
54 ənʌðɚ wʌn
55 ənʌðɚ wʌn əv ðɛm
56 ðɛn
57 wɛl ðɛn
58 wɛl ðɛn brʌðɚ
59 fɑðɚ
60 hɪz fɑðɚ
61 ðæts hɪz fɑðɚ
62 jɛs ðæts hɪz fɑðɚ
63 ðoz
64 se ðoz
65 se ðoz laɪk ðɪs
66 ðɛr
67 ðɛrz
68 ɪts ðɛrz
69 jɛs ɪts ðɛrz
70 wɛðɚ
71 naɪs wɛðɚ
72 ðə naɪs wɛðɚ
73 ðe
74 ðe wɛnt
75 ðe wɛnt ðɛr
76 ðe wɛnt ðɛr tu
77 briðɚ
78 ə briðɚ
79 tek ə briðɚ
80 lɛts tek ə briðɚ

[ð] II - 6

1 ðe
2 ðe kem
3 ðe kem hɪr
4 brið
5 brið dip
6 pliz brið dip
7 mʌðɚ
8 hɝ mʌðɚ
9 hɝ mʌðɚ ɪz hɪr
10 ðoz
11 gɛt ðoz
12 ju gɛt ðoz
13 ju gɛt ðoz fɛðɚz
14 beð
15 beðɪŋ
16 ðɛr beðɪŋ
17 ðɛr θru beðɪŋ
18 ðɛm
19 kɔld ðɛm
20 ðe kɔld ðɛm
21 si ðæt
22 ju si ðæt
23 du ju si ðæt
24 du ju si ðæt fɛðɚ
25 ðɛmsɛlvz
26 ɔl baɪ ðɛmsɛlvz
27 ðe go ɔl baɪ ðɛmsɛlvz
28 wɛðɚ
29 wɛðɚ mæn
30 wɛðɚ me bɑðɚ ʌs
31 ðə ʌðɚ
32 wɪð ðə ʌðɚ
33 ðə ʌðɚ gɝlz brʌðɚ
34 ræˈðɚ
35 aɪd ræðɚ
36 ʃid ræðɚ
37 ɪf jud ræðɚ
38 ənʌðɚ
39 hæv ənʌðɚ
40 ðe hæv ənʌðɚ
41 ðɛn ju hæv ənʌðɚ
42 dont bɑðɚ
43 dont bɑðɚ hɪm
44 dont bɑðɚ hɝ iðɚ
45 ðe bɑðɚ ʌs ðo
46 baɪ ðɛr
47 hi ræn baɪ ðɛr
48 ðɛn hi ræn baɪ ðɛm
49 hi ræn baɪ ðə ʌðɚz
50 ənʌðɚ
51 ənʌðɚ wɝd
52 ðæts ənʌðɚ wɝd
53 ðɛn se ənʌðɚ wɝd
54 wɛðɚ
55 ðə wɛðɚ ɪz naɪs
56 ðə wɛðɚ wɪl tʃendʒ
57 aɪ laɪk ðɪs wɛðɚ
58 ðiz

59 se ðiz ðɛn
60 kæn ðe se ðɪz
61 ðɪs we
62 go ðɪs we
63 ju go ðɪs we
64 ðɪs ɪz ðə we tə go
65 hɪz fɑðɚ
66 ðɛrz hɪz fɑðɚ
67 ə naɪs fɑðɚ
68 ðɛrz hɝ mʌðɚ
69 ðæn
70 mɔr ðæn tu
71 fɔr ɪz mɔr ðæn θri
72 aɪ hæv mɔr ðæn ðæt
73 lɛðɚ
74 ə lɛðɚ bɛlt
75 ðæts maɪ lɛðɚ bɛlt
76 ðɪs ɪz smuð lɛðɚ
77 təgɛðɚ
78 ðe wɝk təgɛðɚ
79 ðe suð itʃ ʌðɚ
80 wɪr dʌn wɪð ənʌðɚ

[ð] II - 7

1 ðə sem we
2 ðɪs ɪz ðə sem we
3 ðɛrz nɑt ənʌðɚ we
4 wi sɛd ɪt ðɪs we bəfɔr
5 wil se ʌðɝz ðɪs we tu
6 du ðə lɛsənz
7 du ðə lɛsənz wɪð mi
8 hɛlp mi wɪð ðə lɛsənz
9 ðiz lɛsənz ɑr hɑrd
10 ɔl əv ðɛm ɑrnt hɑrd
11 ðoz ɑr bʌt ðiz ɑrnt
12 lɛts stɑrt wɪð ðiz ðɛn
13 wi kən du ðoz letɚ
14 lɛts go ovɚ ðɛr tə du ðɛm
15 aɪ laɪk tə wɝk ðɛr
16 no bɑdi bɑðɚz ju ðɛr
17 hwɛr ɑr ðe
18 ðe lɛft təgɛðɚ
19 aɪ θɔt ðe kem ðɪs we
20 mebi ðe wɛnt ənʌðɚ we
21 ðe kʊd hæv gɔn wɪð hɪm
22 ɪts nɑt laɪk ðɛm tə du ðæt
23 wet - ðɛr ðe kʌm naʊ
24 huz ðæt
25 huz ðæt bɔɪ ovɚ ðɛr
26 ðæts hɝ brʌðɚ
27 ɑr ju ʃʊr ðæts hɝ brʌðɚ
28 ðe dont lʊk laɪk itʃ ʌðɚ
29 no hi lʊks laɪk ðɛr fɑðɚ
30 ʃi lʊks laɪk ðɛr mʌðɚ
31 hwɑt wɛðɚ
32 ðɪs wɛðɚ ɪz hɔrəbəl
33 ðə wɛðɚ jɛstɚde wʌz bɛtɚ
34 bʊt niðɚ de hæz bɛn wɔrm
35 ðə wɪndz frʌm ðə nɔrθ
36 ðæt nɔrðɚn wɪndz ɔlwez kold
37 ðiz ɑr maɪn
38 ðiz fɛðɚz ɑr maɪn
39 aɪ gɑt ðɛm jɛstɚde
40 aɪ gɑt ðɛm ovɚ ðɛr
41 aɪm ʃʊr ðiz ɑr maɪn nɑt ðoz
42 ðoz fɛðɚz ɑr sʌmwʌn ɛlsɪz
43 ðev lɛft ðoz ðɛr tu dez
44 ðe ʃʊd gæðɚ ðɛm ʌp naʊ
45 ðə fɛðɚz ɑr gɛtɪŋ brokən
46 ðɛr prɪti fɛðɚz ðo
47 go wɪθ mi
48 go tə ðə stɔr wɪð mi
49 aɪm nɑt goɪŋ wɪð ðə ʌðɚz
50 ðe ɑrnt ʃʊr hwɛðɚ ðɛr goɪŋ
51 ðe maɪt go ənʌðɚ de
52 ðe kən go baɪ ðɛmsɛlvz
53 wi kən go sunɚ ðæn ðæt
54 ðɛn wil bi təgɛðɚ
55 aɪd ræðɚ go wɪð ju eniwe
56 jʊr mɔr fʌn ðæn ðe ɑr
57 ðɛrz maɪ bɛlt
58 ðæts maɪ lɛðɚ bɛlt
59 ɪts med əv smuð lɛðɚ
60 aɪ just tə hæv ənʌðɚ wʌn
61 ɪt wʌzn̩t æz smuð æz ðɪs wʌn
62 bʌt ðæt bɛlt bɑðɚd mi
63 ðæts waɪ aɪ gɑt ə smuð wʌn
64 ðə smuð wʌnz bɛtɚ ðæn ðə ʌðɚ
65 dɪdn̩t ðe go
66 dɪdn̩t ðe go ovɚ ðɛr tu
67 aɪ dont θɪŋk ðe wɛnt
68 ɔlðo ðe maɪt hæv gɔn
69 mebi dʒʌst wʌn əv ðɛm wɛnt
70 no ðɛr ɔlwez təgɛðɚ
71 ðe ækt laɪk twɪn brʌðɚz
72 ðe wont muv wɪðaʊt itʃ ʌðɚ
73 iðɚ boθ wɛnt ɔr niðɚ dɪd
74 ðæts ðə we
75 ðæts ðə we tə du ðɛm
76 ɪts bɛtɚ ðæn ɛni ʌðɚ we
77 no ʌðɚ we wɪl wɝk
78 ðɪs we ɪz ðə bɛst we
79 so ðæts ðə we wiv dʌn ðɛm
80 wiv dʌn ðɛm ɔl naʊ

[v] BTT - 2

Listen for [v]. You will hear one word. After you hear [v], you will press button 1.

1	1	v:ə	Push button 1
1	2	və	Push 1
1	3	əv:	Push 1
1	4	əv	Push 1
1	5	və	1
1	6	əv	1
1	7	ɑv	1
1	8	vɑ	1
4	9		Push button 4

Now, you will hear one word, but [v] is not in the word. You will not hear [v]. After you hear the word, you will press button 4.

4	10	m:ʌ	Push button 4
4	11	mʌ	Push 4
4	12	ʌm:	Push 4
4	13	ʌm	Push 4
4	14	dʒʌ	4
4	15	ʌdʒ	4
4	16	tɛ	4
4	17	ɔt	4
1	18		Push button 1

Listen for [v]. You will hear one word. If you don't hear [v], you will press button 4. When you hear [v], you will press button 1.

1	19	v:ə	Push 1
1	20	vɑ	1
1	21	ɑv	1
4	22	ɑm	Push 4
4	23	mɑ	4
4	24	mʌ	4
1	25	ʌɔ	1
1	26	ov	1
4	27	nɑ	4
1	28	iv	1
4	29	udʒ	4
4	30	un	4
1	31	vɛ	1
4	32	in	4
1	33	vɑ	1

[v] I - 1

Training Tape Leader

1	1		Push button 1
4	2		Push button 4
2	3		Push button 2
3	4		Push 3
1	5		Push 1

Listen for [v]. You will hear one word. [v] is in the word. You will press button 1 after you hear the word.

1	6	v:ə	Push button 1
1	7	vɑ	Push 1
1	8	vu	1
1	9	ɑv	1
1	10	ɔv	1
1	11	uv	1
4	12		Push button 4

Now, you will hear one word, but [v] is not in the word. You will not hear [v]. You will press button 4 after you hear the word.

4	13	m:ʌ	Push button 4
4	14	mɑ	Push 4
4	15	ɑm	4
4	16	tɛ	4
4	17	dʒɔ	4
4	18	ɑn	4
1	19		Push button 1

Listen for [v]. You will hear one word. When [v] is not in the word, you will press button 4. When [v] is in the word, you will press button 1.

1	20	vɑ	Push 1
1	21	ɑv	1
4	22	mɑ	Push 4
4	23	ɑm	4
1	24	iv	1
4	25	it	4
4	26	tɛ	4
1	27	vɛ	1
4	28	ɑn	4
1	29	ɔv	1
1	30	vɑ	1

Program

1	1	vɑ
4	2	mɑ
1	3	vɑ
4	4	ri
4	5	tʃe
1	6	vu
4	7	pɑ

1	8	vi
4	9	zɔ
1	10	vi
4	11	po
4	12	mju
1	13	vɔ
4	14	sɪ
4	15	θu
4	16	ʃaʊ
1	17	ve
4	18	rɑ
1	19	vu
1	20	vɔ
4	21	gɛ
4	22	kɔ
1	23	vaɪ
1	24	vɛ
4	25	jɔɪ
1	26	vɪ
1	27	vo
4	28	bɛ
1	29	vaʊ
4	30	fi
1	31	ɑv
1	32	ɑv
4	33	ɑt
1	34	ɛv
4	35	ʊl
1	36	ov
4	37	oʃ
4	38	in
1	39	ɛv
4	40	aɪð
1	41	ɔɪv
4	42	ɛk
1	43	ɛv
1	44	ɔv
1	45	æv
1	46	ɔv
4	47	ʌf
1	48	ɪv
1	49	juv
4	50	ip
4	51	ug
4	52	ɔɪb
1	53	ɛv
4	54	ef
4	55	utʃ
4	56	ɑz
4	57	uʒ
1	58	æv
1	59	ɪv
1	60	ɜv
1	61	vɑ
1	62	ɑv
4	63	di
4	64	jum
1	65	væ
4	66	fæ
1	67	ɪrv
1	68	vu
1	69	ɪv
4	70	ot
4	71	waɪ
1	72	ɔv
1	73	ɪv
4	74	aɪb
4	75	ɔs
4	76	θæ
1	77	ʌv
4	78	ɑb
4	79	lu
4	80	ne
4	81	ðɛ
1	82	ɑv
4	83	ʊrf
4	84	dʌ
1	85	aʊv
1	86	vɔ
4	87	aɪd
1	88	vɑr
1	89	vi
1	90	vʌ

[v] I - 2

Training Tape Leader

Listen for [v]. You will hear two words. [v] is at the beginning of the first word. You will press button 1 after you hear [v].

1	6	v:ə	mʌ	Push button 1
1	7	vɑ	mɑ	Push 1
1	8	vɑn	mɑn	1
1	9	vip	mip	1
1	10	vɑ	pɛ	1
1	11	vu	nɛ	1
1	12	vɑ	gɔ	1
2	13			Push button 2

Listen for [v]. You will hear two words. [v] is at the beginning of the second word. You will press button 2 after you hear [v].

2	14	mʌ	v:ə	Push button 2
2	15	mɑ	vɑ	Push 2
2	16	mɑn	vɑn	2

2	17	mip	vip	2
2	18	pɛ	vɑ	2
2	19	nɛ	vu	2
2	20	gɔ	vɑ	2
1	21			Push button 1

Listen for [v]. You will hear two words. When [v] is at the begining of the second word, you will press button 2. When [v] is at the beginning of the first word, you will press button 1.

1	22	vːə	pi	Push 1
1	23	vɛ	gɪ	1
2	24	mɪ	vɛ	Push 2
2	25	nɪ	vu	2
2	26	dʒɪ	vɑ	2
2	27	dʒɑ	vɛ	2
1	28	vu	pɛ	1
1	29	vɑ	nɛ	1
1	30	vu	gɔ	1
2	31	nɪ	vɑ	2
1	32	vɑ	mu	1
1	1			Push button 1
4	2			Push button 4
2	3			Push button 2
3	4			Push 3
1	5			Push 1

Program

1	1	vɑ	mu	
1	2	vɑ	ri	
1	3	vu	pɛ	
2	4	tʃɛ	vɑ	
2	5	gɔ	vɪ	
1	6	vi	tʌ	
2	7	je	vɔɪ	
1	8	vaɪ	kʌ	
2	9	mæ	ve	
1	10	vo	ʃɝ	
1	11	vi	dʒɑ	
2	12	sɑ	vɛrɪ	
2	13	te	vɔɪs	
2	14	gi	væn	
1	15	vot	tʃɛt	
1	16	ves	mʌd	
1	17	vɪzɪt	kʌlɚ	
1	18	vɝb	ʃuz	
2	19	sɑk	vɛnt	
2	20	pʊʃ	vɝs	
3	1			Push button 3
3	2			Push 3
3	3			3
3	4	vɑ	vɑ	Push 3
3	5	vu	vu	3
3	6	vɑ	vu	3
1	7	vɑ	mɪ	1
2	8	mɑ	vu	2
3	9	vɑ	vɑ	3
3	10	vɑ	vɛ	3
3	11	vɛ	vɔ	3
1	12	vɔ	nɪ	1
2	13	gɪ	vo	2
3	14	vɔ	vɛ	3
3	15	vɛ	vo	3
3	16	vɑ	ve	3
3	17	vu	vu	
3	21	vɑ	vɑ	
3	22	vu	vu	
2	23	nɪ	vaʊ	
1	24	vɛ	jɑr	
2	25	lɝ	vo	
3	26	vɛ	vu	
3	27	vɔ	vi	
3	28	vɑ	vʊ	
1	29	ve	sɔɪ	
1	30	vi	ræ	
2	31	ðɔpɚ	væli	
2	32	teki	vɪki	
1	33	vel	pɛm	
2	34	dʒɔɪd	vɔɪs	
3	35	vot	vots	
3	36	vɪzɪt	vɪzɪtɚ	
3	37	vaɪələt	vaɪələt	
1	38	vænɪʃ	wɔʃɪŋ	
1	39	vɪlən	wɪlɪŋ	
3	40	vɛri	vaɪələt	
4	1			Push button 4
4	2			Push 4
4	3			4
4	4	mɑ	mɑ	Push 4
4	5	mɛ	mɛ	4
4	6	mɛ	mɑ	4
1	7	vɑ	nɪ	1
3	8	vɑ	vu	3
2	9	kɔ	vu	2
4	10	mɔ	nɛ	4
4	11	nɪ	sɑ	4
3	12	vu	vɛ	3
2	13	pɛ	vɑ	2
1	14	vo	ge	1
4	15	gɛ	gɪ	4
4	16	nɪ	mɛ	4
4	17	pɑ	lu	
4	41	mɑ	mɑ	

4	42	nɔ	nɔ
2	43	pʌ	vaɪ
4	44	mju	ʃɔ
3	45	væ	vo
3	46	vɪ	vʊ
1	47	vɛ	dʒʊr
3	48	vɔ	ve
4	49	dɑ	tʃi
4	50	kɛ	faʊ
1	51	vɛst	ðæp
3	52	vot	ves
2	53	ˈdɔsəmp	vɚˈmɑnt
4	54	bæm	wuz
4	55	sɑn	fɔz
4	56	bɔɪz	wɔʃ
2	57	ʃaʊ	vaʊ
3	58	vənɪlə	væləntaɪn
4	59	fes	lɪp
1	60	vju	lu
2	61	kʌmɪŋ	vɪlɪdʒ
1	62	vɪzɪtɚ	bʌtɚ
1	63	vɛdʒtəbl̩	təgɛðɚ
1	64	væli	fæmlɪ
2	65	pɪrtʃ	vɝs
3	66	vip	vil
3	67	vaɪn	vɔr
3	68	varnɪʃ	vælju
2	69	bʊkənz	vekeʃən
4	70	fɑrm	kaʊ
1	71	vɔɪs	bɔɪ
1	72	vaɪn	laɪn
2	73	ðiz	vɪzɪt
2	74	wæt	væt
2	75	dɪli	vɛri
2	76	fɔʃ	ves
4	77	bʊʃ	læmp
1	78	ves	flæʃ
4	79	dʌst	si
1	80	vel	bɪŋ
2	81	dotʃ	vot
3	82	vaɪtəmɪn	vɑrnɪʃ
4	83	baɪt	west
1	84	vækjum	fæməli
2	85	bɔrgə	vælɚ
1	86	ven	ðen
1	87	vɝs	fɝst
2	88	bɛri	vɛri
4	89	kuʃ	frʌm
3	90	vaɪrəs	vɑlkeno

[v] I - 3

Training Tape Leader

1	1	Push button 1
4	2	Push button 4
2	3	Push button 2
3	4	Push 3
1	5	Push 1

Listen for [v]. You will hear two words. [v] is at the end of the first word. Press button 1 after you hear [v].

1	6	ɑv:	ɑm	Push button 1
1	7	ɔv	ɔm	Push 1
1	8	tɔv	tɔm	1
1	9	fiv	fim	1
1	10	ɑv	ɑm	1
2	11			Push button 2

Listen for [v]. You will hear two words. [v] is at the end of the second word. Press button 2 after you hear [v].

2	12	ɑm	ɑv:	Push button 2
2	13	ɔm	ɔv	Push 2
2	15	tɔm	tɔv	2
2	16	fim	fiv	2
1	17	ɑm	ɑv	Push button 1

Listen for [v]. You will hear two words. When [v] is at the end of the second word, you will press button 2. When [v] is at the end of the first word, you will press button 1.

1	18	ɑv	ɪp	Push 1
1	19	iv	ɪg	1
2	20	ɪm	ɑv	Push 2
2	21	ɑp	uv	2
2	22	ɪr	uv	2
1	23	uv	ɪdʒ	1
1	24	ɑv	ɪg	1
2	25	ɛm	iv	2
2	26	ɛp	ɔv	2
1	27	ɑv	ol	1

Program

1	1	ɑv	um
1	2	ɑv	ip
1	3	uv	ɛθ
2	4	ɛz	ɑv
2	5	ɔʃ	ɪv
1	6	iv	ʌm
2	7	en	ɔɪv
1	8	aɪv	ʌk
2	9	æg	juv

1	10	ov	ɜt	
1	11	ʌv	ip	
2	12	hus	lɪv	
2	13	gɔg	muv	
2	14	tɛz	sev	
1	15	kɜv	tʃaɪn	
1	16	əbʌv	rɪst	
1	17	gɪv	ɪntʃ	
1	18	muv	kɔl	
2	19	hit	əraɪv	
2	20	kɪŋ	glʌv	
3	1			Push button 3
3	2			Push 3
3	3			3
3	4	ɑv	ɑv	Push 3
3	5	ɑv	uv	3
3	6	ɑv	uv	3
1	7	ɑv	um	1
2	8	ɑm	iv	2
3	9	ɑv	ɑv	3
3	10	iv	ɑv	3
2	11	ɛp	ov	2
1	12	iv	ɑg	1
3	13	ov	uv	3
3	14	ɑv	ɔv	3
3	15	uv	uv	
3	21	ɑv	ɑv	
3	22	uv	uv	
2	23	ɪp	aʊv	
1	24	ɛv	ɑrg	
2	25	ɜtʃ	ov	
3	26	ɛv	uv	
3	27	ɔv	iv	
3	28	ɑv	ʊv	
1	29	ev	ɔɪs	
1	30	iv	æŋ	
2	31	ɔsɪd	əˈlaɪv	
2	32	əmɪf	bəˈliv	
1	33	gev	zet	
2	34	pɑz	hæv	
3	35	pruv	pruv	
3	36	sev	ʃev	
3	37	əbʌv	lʌv	
1	38	wev	ʃed	
1	39	dʌv	tʌb	
3	40	slev	gɪv	
4	1			Push button 4
4	2			Push 4
4	3			4
4	4	ɑm	ɑm	Push 4
4	5	im	im	4
4	6	ɑm	ip	4
1	7	ɑv	um	1

3	8	uv	uv	3
2	9	ɪp	iv	2
4	10	ɪp	ɑm	4
4	11	ɔg	in	4
4	12	un	ɛg	
3	13	ɑv	ov	3
1	14	iv	ʌt	1
2	15	ɔt	ev	2
4	16	ɪp	ɑm	4
4	17	əp	ɔp	
4	41	ɑm	ɑm	
4	42	ɔs	ɔs	
2	43	ʌn	aɪv	
4	44	jut	ɔʒ	
3	45	æv	ov	
3	46	ɪv	ʊv	
1	47	ɛv	ʊʃ	
3	48	ɔv	[illegible]	
4	49	ɑtʃ	ið	
4	50	ɛf	aʊd	
1	51	ʌv	aʊð	
3	52	liv	ʃev	
2	53	dʌb	daɪv	
4	54	nok	suf	
4	55	wʌð	mɪp	
4	56	aʊt	dʒɑb	
2	57	sef	wev	
3	58	ʃʌv	stov	
4	59	dɪd	fil	
1	60	brev	tred	
2	61	ʃub	pruv	
1	62	lʌv	lek	
1	63	gev	glæd	
1	64	bihaɪv	biniθ	
2	65	klof	klov	
3	66	dev	nov	
3	67	stuv	hæv	
3	68	əˈraɪv	bəˈliv	
2	69	neb	slev	
4	70	sæd	faɪt	
1	71	sliv	slip	
1	72	lɪv	rɪb	
2	73	daɪm	draɪv	
2	74	slɔf	lʌv	
2	75	stɪb	æktɪv	
2	76	faɪð	faɪv	
4	77	læf	sæk	
1	78	hæv	læf	
4	79	saɪd	rʌn	
1	80	twɛlv	nɛb	
2	81	puf	glʌv	
3	82	pruv	daɪv	
4	83	wɪnd	waɪf	
1	84	draɪv	græb	

2	85	kef	kev	
1	86	bəliv	stib	
1	87	sɜv	hɝd	
2	88	əlon	əlaɪv	
4	89	drɛs	dʒɪb	
3	90	ʌv	sliv	

[v] I - 4

Training Tape Leader

1	1			Push button 1
4	2			Push button 4
2	3			Push button 2
3	4			Push 3
1	5			Push 1

Listen for [v]. You will hear two words. [v] is in the middle of the first word. You will press button 1 after you hear [v].

1	6	ava	ama	Push button 1
1	7	ovo	omo	Push 1
1	8	avu	amu	1
1	9	avi	ami	1
1	10	evz	emz	1
2	11			Push button 2

Listen for [v]. You will hear two words. [v] is in the middle of the second word. You will press button 2 after you hear [v].

2	12	ama	ava	Push button 2
2	13	omo	ovo	Push 2
2	14	amu	avu	2
2	15	ami	avu	2
2	16	emz	evz	2
1	17			Push button 1

Listen for [v]. You will hear two words. When [v] is in the middle of the second word, you will press button 2. When [v] is in the middle of the first word, you will press button 1.

1	18	ava	amu	Push 1
1	19	ava	umə	1
2	20	ɛmə	avu	Push 2
2	21	ɪpe	uvə	2
1	22	ive	ʌta	1
2	23	ʌru	ɛvi	2
2	24	una	ova	2
1	25	ovi	upə	1
1	26	uvi	ɛpɛ	1
2	27	æmɛ	ivɔ	2
1	28	ave	ɛgə	1

Program

1	1	ava	umu	
1	2	ava	ɪre	
1	3	ˈuvɚ	ɛpi	
2	4	ɛtʃɚ	avo	
2	5	ɔgo	ˈɪvɚ	
1	6	iˈvi	ʌˈte	
2	7	edʒe	ɔɪvi	
1	8	aɪˈvaɪ	ʌks	
2	9	bemu	juvɚ	
1	10	ovo	ɝʃɝ	
1	11	kʌvɚ	gami	
2	12	esaʊ	ivən	
2	13	tʌθɪŋ	livɪŋ	
2	14	zukɚ	nɛvɚ	
1	15	hɛvɪ	hʌʃa	
1	16	gɪvɪŋ	hɔlɪŋ	
1	17	sɪlvɚ	sɪstɚ	
1	18	trævəl	titʃɚ	
2	19	hæpɪ	hævənt	
2	20	læmp	lʌvd	
3	1			Push button 3
3	2			Push 3
3	3			3
3	4	ava	avə	Push 3
3	5	uvə	ava	3
2	6	ama	avə	2
1	7	uvi	atʃə	1
3	8	uvi	avə	3
3	9	ivo	avɚ	3
3	10	avu	uvi	3
1	11	avu	ɪpe	1
2	12	ɛkə	uvɛ	2
3	13	uvɚ	avi	3
3	14	uvu	uvi	3
3	21	ava	ava	
3	22	uvu	uvu	
2	23	ɪni	aʊvo	
1	24	ɛvi	arjɛ	
2	25	ɛrlo	ˈove	
3	26	ɛˈve	uvu	
3	27	ˈɔve	ivi	
3	28	ava	ˈuvi	
1	29	evz	ɔɪˈso	
1	30	ˈivɚ	ˈærə	
2	31	ezɪŋ	ivən	
2	32	gɪðɚ	gɪvən	
1	33	ovɚ	æwɚ	
2	34	ɛdar	ɛvrɪ	

3	35	rivɚ	rɪvɚ	
3	36	ɛvɚ	lɛvɚ	
3	37	lʌvɪŋ	lɪvɪŋ	
1	38	fevɚ	faðɚ	
1	39	slɪvɚ	spaɪdɚ	
3	40	ɪnvaɪt	əlɛvən	
4	1			Push button 4
4	2			Push 4
4	3			4
4	4	ɑmɑ	ɑmɑ	Push 4
4	5	ɑmɑ	ɑpɑ	4
1	6	ɑvə	ɑpɔ	1
3	7	ɑvi	uvə	3
4	8	ɛgɔ	ɪpu	4
2	9	ɪge	evɑ	2
4	10	ɪkɔ	ɪge	4
4	11	ɑmɑ	θpi	4
3	12	ɑvɑ	ɛvi	3
2	13	ʌtʃi	ɛvu	2
1	14	uvɑ	ɪgə	1
4	15	ɪgə	ɪmə	4
4	16	ɔtʃi	ɔtʃu	4
4	41	ɑmɑ	ɑmɑ	
4	42	ɔti	ɔʃe	
2	43	ʌpi	aɪvɚ	
4	44	juni	ɔlʌ	
3	45	ˈævo	oˈve	
3	46	ɪvi	ʊvɚ	
1	47	ɛvəl	ʊrfi	
3	48	ɔvo	ɛvu	
4	49	ɑft	iði	
4	50	ɛbu	aʊˈso	
1	51	sɝvɪŋ	tɝfɪŋ	
3	52	əraɪvəl	fivɚ	
2	53	hɛdɪn	hɛvən	
4	54	sɝbi	æfən	
4	55	izɚ	ɔbɪŋ	
4	56	snoɪŋ	soldʒɚ	
2	57	mebɪ	sevɪŋ	
3	58	sɛvɛn	klovɚ	
4	59	sitɛd	lɛft	
1	60	kʌvɚz	koldz	
2	61	wetʃɪŋ	wevɪŋ	
1	62	lɪvd	lɪft	
1	63	ivən	əbaʊt	
1	64	lʌvɚ	ludɚ	
2	65	nɛdɚ	nɛvɚ	
3	66	sɛvɚəl	sevɪŋ	
3	67	sɪlvɚ	muvɪŋ	
3	68	slivlɛs	gɪvən	
2	69	lʌbɪŋ	lʌvɪŋ	
4	70	ædɪŋ	æftɚ	
1	71	ovɚ	əwe	
1	72	risivɪŋ	risidɪŋ	
2	73	sʌfɚ	sɛvɚəl	
2	74	bæbɪn	hævənt	
2	75	fiθɚɪʃ	fivɚɪʃ	
2	76	rʌwən	rɪvɚ	
4	77	əhwəɪl	lidɚ	
1	78	wevɪ	wetɪŋ	
4	79	mitɪŋ	niðɚ	
1	80	ɛvɚ	ɛbɚ	
2	81	sɝdɪŋ	sɝvɪŋ	
3	82	dɪskʌvɚ	draɪvɪŋ	
4	83	letɚ	lebɚ	
1	84	gɪvən	goldən	
2	85	æðɚz	ædvæns	
1	86	draɪvɪŋ	drefɪŋ	
1	87	hɛvɪ	hɛrɪ	
2	88	ɪnwɝd	ɪnvɛnt	
4	89	ɛfət	æbən	
3	90	kʌvɚɪŋ	sɝvənt	

[v] I - 5

Training Tape Leader

1	1		Push button 1
4	2		Push button 4
2	3		Push button 2
3	4		Push 3
1	5		Push 1

Listen for [v]. You will hear one word. [v] is at the beginning of the word. You will press button 1 after you hear [v].

1	6	vːə	Push button 1
1	7	vɑ	Push 1
1	8	vɑp	1
1	9	vup	1
3	10		Push button 3

Listen for [v]. You will hear one word. [v] is at the end of the word. You will press button 3 after you hear [v].

3	11	ɑvː	Push button 3
3	12	kɑv	Push 3
3	13	tɑv	3
3	14	tɛv	3
2	15		Push button 2

Listen for [v]. You will hear one word. [v] is in the middle of the word. You will press button 2 after you hear [v].

2	16	ɑvːə	Push button 2
2	17	ɑvi	Push 2
2	18	ɑvɚ	2

2	19	luvɚ	2
1	20		Push button 1

You will hear one word. Listen for [v]. When [v] is at the end, you will press button 3. When [v] is in the middle, you will press button 2. When [v] is at the beginning, you will press button 1.

1	21	vɑr	Push 1
2	22	ɑvi	Push 2
3	23	kɑv	Push 3
3	24	ʃuv	3
3	24	vɑp	3
1	25	uvo	1
2	26	vup	2
1	27	tiv	1
3	28	uvɚ	3
2	29	ɑvɚ	2
2	30	ɔv	2
3	31	vɑr	3
1	32		1

Program

1	1	vɑr	
2	2	ɑvi	
3	3	kɑv	
3	4	dʒiv	
1	5	vetʃ	
2	6	uvɚ	
1	7	vɑp	
3	8	tiv	
2	9	ɔvju	
2	10	ivo	
3	11	lɪv	
2	12	kʌvɚ	
2	13	sivæm	
1	14	vɔrtʃ	
2	15	aɪvɪk	
1	16	vɛrɪ	
3	17	muv	
1	18	vɔɪs	
1	19	vɔʃɪ	
3	20	mev	
2	21	ivən	
3	22	kev	
1	23	vɪzɪt	
3	24	daɪv	
1	25	vɝs	
1	26	vælɪ	
2	27	lɪvɪŋ	
3	28	ʃʌv	
2	29	gɪvɪŋ	
3	30	wev	
4	1		Push button 4
4	2		Push 4
4	3		4
4	4	sɑb	4
4	5	mig	4
4	6	ɑbi	4
4	31	ɑði	
4	32	wɑg	
4	33	ʃɑb	
3	34	tɛv	
1	35	vul	
2	36	rivɚ	
4	37	ðʌ	
3	38	tiv	
4	39	ebɚ	
2	40	ɛvɚ	
1	41	ves	
1	42	vɛnt	
3	43	pruv	
4	44	lif	
2	45	sɛvən	
4	46	bɛrɪ	
1	47	vot	
2	48	fivɚ	
3	49	lʌv	
2	50	wevɪŋ	
2	51	hɛvɪ	
3	52	ʃev	
1	53	vænɪʃ	
4	54	fɝst	
3	55	gɪv	
3	56	hæv	
3	57	sliv	
4	58	læfɪŋ	
2	59	fevɚ	
1	60	vɑlkeno	
2	61	ivɛnt	
4	62	fes	
3	63	faɪv	
1	64	vɛrɪ	
1	65	vaɪtəmɪn	
4	66	lof	
3	67	ʌv	
1	68	vɪkɪ	
4	69	dʒɑb	
2	70	nɛvɚ	
1	71	vɪzɪtɚ	
4	72	hæf	
3	73	brev	
4	74	wedɪŋ	
3	75	glʌv	

2	76	klovɚ
3	77	stov
4	78	wɜs
2	79	sɜvɪŋ
1	80	vekeʃən
2	81	gɪvən
1	82	vel
4	83	ɔf
4	84	rɪbən
2	85	hɛvən
4	86	sefɚ
1	87	vækjum
4	88	lidɪŋ
1	89	væləntaɪn
4	90	faɪn

[v] I - 6

Training Tape Leader

1	1		Push button 1
4	2		Push button 4
2	3		Push button 2
3	4		Push 3
1	5		Push 1

Listen for [v]. You will hear one word. There is one [v] in the word. You will press button 1 when you hear one [v] in the word.

1	6	v:ə	Push 1
1	7	ɑv	Push 1
1	8	ɑvə	Push 1
1	9	vopɪ	1
1	10	guvɚ	1
1	11	sɛv	1
3	12		Push button 3

Listen for [v]. You will hear one word. There is more than one [v] in the word. You will press button 3 when you hear two [v] in the word.

3	13	vəˈvo	Push 3
3	14	ˈvovə	Push 3
3	15	vaɪv	Push 3
3	16	vovək	3
3	17	ivaɪv	3
3	18	vɔkvə	3
4	19		Push button 4

Now you will hear one word, but [v] is not in the word. You will not hear [v]. After you hear the word, you will press button 4.

4	20	no	Push 4
4	21	nɑt	Push 4
4	22	spem	4
4	23	mɑst	4
1	24		Push button 1

You will hear one word. Listen for [v]. When there is no [v], you will press button 4. When there is more than one [v], you will press button 3. When there is one [v], you will press button 1.

1	25	v:ə	Push 1
1	26	ɑv	1
3	27	vəˈvo	Push 3
3	28	ˈvovə	3
4	29	no	Push 4
4	30	nɑt	4
1	31	ɑvə	1
1	32	vopɪ	1
4	33	spem	4
3	34	vaɪv	3
1	35	guvɚ	1
1	36	vætʃ	1
1	37	kɔvəl	1
3	38	ivekvə	3
4	39	mɑst	4
1	40	vɛrɪ	1

Program

1	1	vɛrɪ
1	2	ivən
1	3	lɪv
3	4	vɑvum
4	5	bɛst
3	6	vælv
1	7	vɜs
4	8	fɜst
1	9	nɛvɚ
1	10	sliv
4	11	lif
1	12	vɔɪs
1	13	sɪlvɚ
1	14	əlaɪv
1	15	vɪzɪt
3	16	vivʌ
1	17	lʌvlɪ
1	18	ʃev
4	19	bebi

3	20	vɛlvət
1	21	vælɪ
1	22	glʌv
4	23	bɛrɪ
3	24	ivesɪv
1	25	vənɪlə
4	26	lɪd
1	27	nɛvən
1	28	pruv
1	29	rɪvɚ
4	30	rɪbən
3	31	rivɔlv
4	32	ʃed
1	33	vænɪʃ
1	34	gɪvɪŋ
4	35	bɔɪz
1	36	əraɪv
3	37	vɔdvɪl
1	38	vekənt
1	39	hævɛnt
3	40	rivaɪv
4	41	fedɪŋ
1	42	brev
1	43	vækum
1	44	sɜvɪŋ
1	45	faɪv

[v] I - 7

Training Tape Leader

1	1	Push button 1
4	2	Push button 4
2	3	Push button 2
3	4	Push 3
1	5	Push 1

Listen for [v]. You will hear two words. When the first word has a good [v], you will press button 1. When the second word has a good [v], you will press button 2.

1	6	vɔɪs	no	Push 1
2	7	no	vɔɪs	Push 2
2	8	nu	laɪv	2
1	9	haɪv	haʊs	1
2	10	gem	ɛvɚ	2
1	11	rɪvɚ	lɛtɚ	1
3	12			Push button 3

Listen for [v]. You will hear two words. When both words have a good [v], you will press button 3. When neither word has a good [v], you will press button 4.

3	13	vɔɪs	vɔɪs	Push 3
3	14	ves	vɔɪs	3
4	15	no	nʌn	4
4	16	ne	nɑt	4
3	17	liv	laɪv	3
3	18	ɛvɚ	nɛvɚ	3
1	19			Push button 1

Listen for [v]. You will hear two words. When [v] is in the first word, you will press button 1. When [v] is in the second word, you will press button 2. When [v] is in both words, you will press button 3. When [v] is in neither word, you will press button 4.

1	20	vɔɪs	no	Push 1
2	21	no	vɔɪs	2
3	22	vɔɪs	vɔɪs	3
4	23	no	nʌn	4
3	24	liv	laɪv	3
4	25	ne	nɑt	4
2	26	lɪk	lɪv	2
1	27	pev	pes	1
1	28	lɛvɚ	lɛtɚ	1
2	29	mutʃɪŋ	muvɪŋ	2
4	30	krip	kip	4
3	31	vɛnt	vɛnt	3
1	32	vɛrɪ	kɛrɪ	1

Program

1	1	vɛrɪ	kɛrɪ
2	2	hæv	hæv
3	3	ivən	ivən
4	4	gem	gem
1	5	vɔɪs	tʃɔɪs
3	6	vɛnt	vɛnt
4	7	æɪpɚ	zɪpɚ
2	8	pælɪ	vælɪ
1	9	vot	kot
1	10	sev	sedʒ
2	11	kes	kev
1	12	liv	lik
2	13	gɪt	gɪv
2	14	læst	væst
2	15	ðɛst	vɛst
1	16	lʌvɪŋ	lʌgɪŋ
1	17	vɪzɪt	wɪzɪt
2	18	hæŋ	hæv

1	19	ɛvɚ	ɛdɚ
2	20	liwɪŋ	livɪŋ
2	21	rʒðɚ	nɛvɚ
2	22	odɚ	ovɚ
3	23	ves	ves
3	24	gɪv	gɪv
2	25	wɛt	vɛt
2	26	laɪt	laɪv
2	27	lʌf	lʌv
1	28	rɪvɚ	rɪdɚ
4	29	lidɪŋ	blidɪŋ
1	30	sliv	slip
1	31	ʌvən	ʌbən
2	32	haɪd	haɪv
2	33	wɜs	vɜs
1	34	slev	sled
2	35	muð	muv
3	36	əbʌv	əbʌv
2	37	fju	vju
2	38	wæn	væn
1	39	wev	wed
3	40	twɛlv	twɛlv
2	41	gɪbən	gɪvən
1	42	faɪv	faɪt
1	43	gev	gep
4	44	odɚ	ʌðɚ
1	45	vækjum	wækjum
1	46	lɪv	lɪd
1	47	vel	bel
2	48	fæt	væt
1	49	ʌv	ʌp
2	50	wɔlt	vɔlt
2	51	hæŋɪŋ	hævɪŋ
2	52	gɪbɚ	gɪvɚ
1	53	vaɪs	raɪs
1	54	laɪvlɪ	laɪflɪ
4	55	laɪf	naɪf
2	56	fekɚ	fevɚ
2	57	draɪb	draɪv
2	58	hɛðən	hɛvən
1	59	muvmɛnt	muzmɛnt
2	60	pruf	pruv
1	61	vaʊ	baʊ
1	62	stov	stof
1	63	ven	wen
4	64	laɪf	waɪf
1	65	pev	ped
4	66	bɛrɪ	bɛrɪ
2	67	lʌbɪŋ	lʌvɪŋ
3	68	vɪlən	vɪlən
2	69	fɪlɪdʒ	vɪlɪdʒ
1	70	slɪvɚ	slɪpɚ
1	71	kʌvɚ	kʌbɚ

1	72	fivɚ	fiθɚ
3	73	rovɚ	rɪvɚ
1	74	biliv	bilif
2	75	araɪd	araɪv
1	76	væst	fɜst
2	77	bes	ves
3	78	rɛvɚ	lɛvɚ
1	79	lɛvɚ	lɛfɚ
4	80	sef	sɜf
4	81	lodɪŋ	lofɪŋ
1	82	fevɚ	lebɚ
2	83	sɪbɚ	sɪlvɚ
1	84	ʌvən	ɔfən
1	85	vil	bɪl
2	86	bælɪ	vælɪ
2	87	kɜb	kɜv
2	88	webɪŋ	wevɪŋ
2	89	sɛbən	sɛvən
1	90	vælju	bælju

[v] II - 1

1	mɑ
2	nɛ
3	mɔ
4	vɑ
5	tɑ
6	vɑ
7	nu
8	vu
9	vi
10	aɪm
11	aɪn
12	ɑp
13	ɔv
14	ɑv
15	ɛk
16	iv
17	un
18	aɪv
19	ʃaʊ
20	vaʊ
21	ti
22	vɛ
23	ɛmɛ
24	ɑnɑ
25	ɑpɑ
26	ɑvɑ
27	oʃo
28	ovo
29	ove
30	unu
31	uvu

32 ʊso
33 aʊm
34 ɔɪv
35 ɪg
36 iv
37 dæ
38 vɑ
39 vʌ
40 ɛwe
41 ɔɪve
42 ɔvi
43 aɪf
44 uv
45 vɛ
46 ɪb
47 ɪvɔ
48 ʌv
49 ʊve
50 væ

[v] II - 2

1 mɑ
2 nɛ
3 mɔ
4 vi
5 tu
6 vju
7 kaʊ
8 vaʊ
9 vaɪ
10 ʃo
11 vo
12 vot
13 mɔr
14 vɛr
15 vɛri
16 ɑm
17 un
18 it
19 iv
20 se
21 sev
22 sʌn
23 ʌv
24 lʌv
25 hɪr
26 liv
27 lɪv
28 hæz
29 hæv
30 laɪv
31 faɪv
32 sɛt
33 vɛt
34 ɛst
35 vɛst
36 ɑmɑ
37 unu
38 iti
39 ivi
40 rɪp
41 rɪvɚ
42 ðo
43 ovɚ
44 ɛvri
45 lɪp
46 lɪvɚ
47 sɛt
48 sɛvɛn
49 ɛl
50 ɛlvz
51 sɛlvz
52 sɝ
53 sɝv
54 sɝvz
55 bɔɪ
56 vɔɪs
57 væli
58 kʌt
59 kʌvɚ
60 iv
61 ivən
62 ivnɪŋ
63 fil
64 wet
65 vɛr
66 vɛri
67 vɝs
68 gre
69 grev
70 grevi
71 ʃev
72 pes
73 ves
74 muv
75 muvi
76 kæv
77 hæv
78 ɛvɚ
79 nɛvɚ
80 vɛt

[v] II - 3

1 mɑ
2 pɑ
3 vɑ

4 vi
5 mɔɪ
6 vɔɪ
7 mu
8 vu
9 vju
10 ɑm
11 ɑv
12 ov
13 ʌp
14 ʌv
15 ɑm
16 æv
17 hæv
18 vaɪ
19 vaɪn
20 ɑmə
21 ɑvɑ
22 ovə
23 ovɚ
24 opɚ
25 ɛvɚ
26 ɛvri
27 iv
28 it
29 aɪv
30 laɪv
31 es
32 ves
33 ɛst
34 vɛst
35 wɛl
36 twɛl
37 twɛlv
38 ɛlvz
39 kot
40 bot
41 vot
42 ɪf
43 ʌv
44 lʌv
45 glʌv
46 glʌvz
47 vaɪ
48 vaɪəl
49 vaɪəlɛt
50 vaɪt
51 vaɪtəmɪn
52 ɪnvaɪt
53 draɪv
54 draɪvɚ
55 sev
56 sɛvən
57 sɛvənti
58 hɛvi
59 hɛvən
60 ev
61 rev
62 grev
63 grevi
64 væl
65 væli
66 vælju
67 vɛl
68 vɛlvət
69 wev
70 fev
71 fevɚ
72 aɪv
73 faɪv
74 vɛri
75 ɛvri
76 nɛvɚ
77 ivən
78 gɪvən
79 gɪvz
80 liv

[v] II - 4

1 vɑ
2 vo
3 vot
4 vots
5 ɛv
6 ev
7 rev
8 brev
9 brevli
10 evi
11 wevi
12 wevɪŋ
13 vɑ
14 vaɪ
15 vaɪn
16 ovʌ
17 ɪvɚ
18 rɪvɚ
19 iv
20 liv
21 sliv
22 livɪŋ
23 vɪzɪt
24 vɪzɪtɚ
25 vɪzɪtɪŋ
26 gɪv
27 gɪvz
28 gɪvɪŋ

29 veg
30 vɛt
31 vɛr
32 vɛri
33 vɛri gʊd
34 vɪ
35 vɪk
36 vɪktri
37 ðə vɪktri
38 ev
39 ʃev
40 ʃevɪŋ
41 ʃevɪŋ krim
42 ev
43 sev
44 sev ɪt
45 vaɪ
46 vaɪn
47 ðʌ vaɪn
48 liv
49 sliv
50 grin sliv
51 hæv
52 hævɪŋ
53 hævɪŋ fʌn
54 vɛri
55 ɛvri
56 ɛvri wʌn
57 lɪv
58 lɪvɪŋ
59 lɪvɪŋ hɪr
60 vɝ
61 vɝs
62 ðə vɝs
63 ðə fɝst vɝs
64 vju
65 ðə vju
66 si ðə vju
67 kev
68 ðe kev
69 ɪn ðə kev
70 lʌv
71 lʌvd
72 lʌvd hɪm
73 ʃi lʌvd hɪm
74 vɝs
75 ðə vɝs
76 rid ðə vɝs
77 lʌv
78 glʌv
79 wʌn glʌv
80 dʒʌst wʌn glʌv

[v] II - 5

1 vaɪ
2 vaɪs
3 vaɪsəz
4 iv
5 liv
6 sliv
7 slivz
8 lɪv
9 lɪvɪŋ
10 laɪvli
11 væl
12 væli
13 ðə væli
14 laɪv
15 əlaɪv
16 ɪts əlaɪv
17 ʃʌv
18 ʃʌvɪŋ
19 stɑp ʃʌvɪŋ
20 vɛnt
21 ðə vɛnt
22 opən ðə vɛnt
23 sev
24 sev ɪt
25 ju sev ɪt
26 sɛvən
27 pedʒ sɛvən
28 ɔn pedʒ sɛvən
29 kev
30 ðə kev
31 ðə bɪg kev
32 vɔɪs
33 ə vɔɪs
34 ə naɪs vɔɪs
35 rivɚ
36 ðə rɪvɚ
37 ðə lezi rɪvɚ
38 ves
39 ðə ves
40 ðə flauɚ ves
41 faɪv
42 ɔl faɪv
43 sev ɔl faɪv
44 ju sev ɔl faɪv
45 vɝs
46 ə vɝs
47 ju sɛd ə vɝs
48 hæv ju sɛd ə vɝs
49 lɪv
50 lɪvɚ
51 lɪvɚz mit

52 rævəl
53 grævəl
54 grævəl rod
55 ɑn ə grævəl rod
56 twɛlv
57 æt twɛlv
58 liv æt twɛlv
59 əlɛvən
60 æftɚ əlɛvən
61 faɪv æftɚ əlɛvən
62 ɪts faɪv æftɚ əlɛvən
63 hæv
64 hæv ɪt
65 hæv ɪt raɪt naʊ
66 vɪzət
67 vɪzətɪŋ
68 vɪzətɪŋ de
69 vɪzətɪŋ dez ovɚ
70 stov
71 ðə stov
72 nɛvɚ tʌtʃ ðə stov
73 vɛst
74 rɛd vɛst
75 hɪz vɛst
76 hɪz rɛd vɛst
77 hæv
78 hæv muvd
79 ju hæv muvd
80 ju hæv muvd ðɛr

[v] II - 6

1 væli
2 ðə væli
3 ðə grin væli
4 stov
5 ðə stov
6 muv ðə stov
7 fevɚ
8 ə fevɚ
9 du mi ə fevɚ
10 vɪzɪt
11 ju vɪzɪt
12 ju vɪzɪt hɪm
13 ju vɪzɪt hɪm ɛvri de
14 muv
15 muvɪŋ
16 kip muvɪŋ
17 ju kip muvɪŋ
18 vɔɪs
19 naɪs vɔɪs
20 vɛri naɪs vɔɪs
21 ðə vɝs
22 rid ðə vɝs
23 ju rid ðə vɝs
24 ju rid vɝs sɛvən
25 vækjum
26 muv ðə vækjum
27 muv ðə vækjum ovɚ hɪr
28 sɛvən
29 sɛvən taɪmz
30 sɛvən taɪmz sɛvən
31 muvi
32 wɑtʃ ðə muvi
33 ðə muvi ɪz ovɚ
34 liv
35 aɪ liv
36 ʃi livz
37 hi nɛvɚ livz
38 kʌvɚ
39 maɪ kʌvɚ
40 ðæts maɪ kʌvɚ
41 gɪv mi maɪ kʌvɚ
42 ðə ves
43 ðə flaʊɚ ves
44 ðə flaʊɚ ves brok
45 dont sev ðə ves
46 æt faɪv
47 liv æt faɪv
48 ju wɪl liv æt faɪv
49 wi wɪl liv æt twɛlv
50 ə draɪvɚ
51 ə bʌs draɪvɚ
52 hiz ə bʌs draɪvɚ
53 gɪv ðə draɪvɚ ə daɪm
54 biliv
55 wʊd ju biliv devəd
56 wʊd ju biliv stiv
57 aɪd biliv boθ əv ðɛm
58 vaɪn
59 ə grep vaɪn
60 greps gro ɔn vaɪnz
61 ə kev
62 ə kev ɪz dɑrk
63 aɪv sin ə kev
64 hæv ju sin ə kev
65 hævɪŋ fʌn
66 aɪv bɪn hævɪŋ fʌn
67 hiz hævɪŋ fʌn
68 wiv hæd tu wɝk
69 kʌvɚ
70 hwɛrz ðə kʌvɚ
71 ðə kʌvɚz ovɚ ðɛr
72 aɪ hæv tu kʌvɚz
73 vɛst
74 aɪ hæv ə vɛst
75 ə vɛst hæz no slivz

76 maɪ vɛst ɪz vɛri naɪs
77 əlɛvən
78 liv æt əlɛvən
79 ɪts ɔlmost ovɚ
80 liv hwɛn ɪts ovɚ

[v] II - 7

1 ðɪs ɪz sɛvən
2 wi hæv dʌn sɪks
3 hæv ju dʌn ɛvriwʌn
4 sev sʌm fɔr hɪm
5 aɪ ivən dɪd wʌn ovɚ
6 aɪ hɪr ðə vɔɪs
7 ʃi sɛd sliv
8 maɪ ʃɜt hæz slivz
9 rol ʌp jʊr sliv
10 aɪv gat ʃɔrt slivz
11 ə vɛst dʌzənt hæv slivz
12 hi hæz ə naɪs vɛst
13 hi wɛrz ɪt ɛvri sʌnde
14 ðev gat ə vɪzɪtɚ
15 hi dʌzənt lɪv hɪr
16 hiz livɪŋ æt faɪv
17 ɪz ðæt hɪz glʌv
18 gɪv hɪz glʌv tu hɪm
19 aɪ gev ɪt tu hɪm
20 pliz muv ðə tʃɛr
21 pʊt ɪt ovɚ hɪr
22 dont dʒʌst ʃʌv ɪt
23 ɪts ə hɛvi tʃɛr
24 aɪl hɛlp muv ɪt
25 wiv gat ə nu stov
26 aɪ lʌv tə kʊk
27 ðɪs stov hæz ə naɪs ʌvən
28 nɛvɚ tʌtʃ ə hat stov
29 ju mʌst bi vɛri kɛrfəl
30 tɛl mi əbaʊt jʊr draɪv
31 wi drov baɪ ə rivɚ
32 wi sɔ ə kev
33 ðə kev wʌz vɛri dark
34 aɪ nɛvɚ sɔ ə kev bifɔr
35 hɪr kʌmz vɪki
36 vɪki ɪz twɛlv
37 ʃiz goɪŋ tu ə muvi
38 ðə muvi starts æt sɛvən
39 ʃil bi bæk æt əlɛvən
40 huz ðæt bɔɪ ðæts livɪŋ
41 hɪz nem ɪz dev
42 hi ʃʊr hæz wevi hɛr
43 aɪv gat stret hɛr
44 hæv ju sin dev ple bɔl
45 hi kən θro ə gret kɜv
46 dɪd ju ʃɪvɚ
47 sʌmθɪŋ gev mi ə tʃɪl
48 ɪts ðə kold ɛr vɛnt
49 ɪt bloz ovɜ hɪr
50 ɪts gɪvɪŋ mi ə kold
51 hwats ə væt
52 ə væts ə bɪg tʌb
53 hæv ju ɛvɜ sin ə væt
54 aɪv nɛvɜ sin wʌn
55 wiv gat tu rɛst naʊ
56 du ju hæv maɪ kʌvɜ
57 ɪt ɪzənt ovɚ ðɛr
58 hæv ju lʊkt ɛvriwɛr
59 aɪv faʊnd ɪt
60 ɪt wʌz əbʌv maɪ hɛd
61 æftɚ wiv rɛstəd lɛts vɪzɪt stiv
62 stiv livz nɛkst dɔr
63 dɪd ju no hiz muvɪŋ
64 ðɛr livɪŋ nɛkst mʌnθ
65 hil lɪv twɛlv maɪlz əwe
66 dɪd ju lɜn ðə vɜs fɔr skul
67 jɛs aɪ kæn se ðə vɜs
68 aɪ no tu vɜsəz naʊ
69 wi hæv tu lɜn fɔr mɔr
70 wɪl ju du mi ə fevɚ
71 jɛs hwatɛvɚ ju æsk
72 gɪv mi jʊr pɛn
73 aɪ hæv tu raɪt ə lɛtɚ
74 wɛrz ðə stæmp aɪ sevd
75 ɪts ovɚ ɪn ðə dɛsk
76 aɪv fɪnɪʃt maɪ lɛtɚ
77 lɛts go ɪn ðə lɪvɪŋ rum
78 wiv gat ə ti vi
79 hwats ɔn ðɪs ivnɪŋ
80 ə muvi kold sɛvən brev mɛn

[ε] BTT - 2

Listen for [ε]. You will hear one sound. After you hear [ε], you will press button 1.

1	1	ε	Push button 1
1	2	ε	Push 1
1	3	ε	Push 1
1	4	ε	1
1	5	ε	1
4	6		Push button 4

Now, you will hear one sound, but you will not hear [ε]. The sound is not [ε]. After you hear the sound, you will press button 4.

4	7	u	Push button 4
4	8	ɑ	Push 4
4	9	ɔ	Push 4
4	10	ju	4
4	11	aʊ	4
1	12		Push button 1

Listen for [ε]. You will hear one sound. If you don't hear [ε], you will press button 4. When you hear [ ], you will press button 1.

1	13	ε	Push 1
1	14	ε	1
1	15	ε	1
4	16	u	Push 4
4	17	ɑ	4
4	18	ɔ	4
1	19	ε	1
1	20	ε	1
4	21	ju	4
1	22	ε	1
4	23	aʊ	4
4	24	o	4
1	25	ε	1

[ε] I -1

Training Tape Leader

1	1	Push button 1
4	2	Push button 4
2	3	Push button 2
3	4	Push 3
1	5	Push 1

Listen for [ε]. You will hear one sound. After you hear [ε], you will press button 1.

1	6	ε	Push button 1
1	7	ε	Push 1
1	8	ε	1
4	9		Push button 4

Now, you will hear one sound, but you will not hear [ε]. The sound is not [ε]. After you hear the sound, you will press button 4.

4	10	u	Push button 4
4	11	ɑ	Push 4
4	12	ɔ	4
1	13		Push button 1

Listen for [ε]. You will hear one sound. If you don't hear [ε], you will press button 4. When you hear [ε], you will press button 1.

1	14	ε	Push 1
1	15	ε	1
4	16	u	Push 4
4	17	ɑ	4
1	18	ε	1
4	19	ɔ	4
4	20	o	4
1	21	ε	1
1	22	ε	1

Program

1	1	ε
1	2	ε
1	3	ε
4	4	ɑ
4	5	u
1	6	ε
4	7	ɑ
1	8	ε
4	9	ɔ
1	10	ε
4	11	i
4	12	ju
1	13	ε
4	14	aɪ
4	15	ju
4	16	aʊ
1	17	ε
4	18	u
1	19	ε
1	20	ε
4	21	i
4	22	ɔ
1	23	ε

1	24	ɛ
4	25	ɔɪ
1	26	ɛ
1	27	ɛ
4	28	c
1	29	ɛ
4	30	ʌ
1	31	ɛ
1	32	ɛ
4	33	ʊ
1	34	ɛ
4	35	e
1	36	ɛ
4	37	aʊ
4	38	ɔɪ
1	39	ɛ
4	40	e
1	41	ɛ
4	42	ɝ
1	43	ɛ
1	44	ɛ
1	45	ɛ
4	46	ɝ
1	47	ɛ
1	48	ɛ
4	49	aɪ
4	50	o
4	51	ʊ
4	52	ʌ
1	53	ɛ
4	54	i
4	55	ɪ
4	56	ɑ
4	57	u
1	58	ɛ
1	59	ɛ
1	60	ɛ
1	61	ɛ
1	62	ɛ
4	63	ʊ
4	64	e
1	65	ɛ
4	66	ɪ
1	67	ɛ
1	68	ɛ
1	67	ɛ
4	70	æ
4	71	e
1	72	ɛ
1	73	ɛ
4	74	ɝ
4	75	æ
4	76	ɪ
1	77	ɛ
4	78	e
4	79	ɪ̇
4	80	ʌ
4	81	ɝ
1	82	ɛ
4	83	æ
4	84	ʌ
1	85	ɛ
1	86	ɛ
4	87	ɪ
1	88	ɛ
1	89	ɛ
1	90	ɛ

[ɛ] I - 2

Training Tape Leader

1	1	Push button 1
4	2	Push button 4
2	3	Push button 2
3	4	Push 3
1	5	Push 1

Listen for [ɛ]. You will hear two words. [ɛ] is in the first word. You will press button 1 after you hear [ɛ].

1	6	ɛp	ɑp	Push button 1
1	7	ɛb	ɑb	Push 1
1	8	ɛv	uv	1
1	9	vɛ	vu	1
1	10	bɛ	bɑ	1
1	11	pɛ	pɑ	1
1	12	ɛd	ɑd	1
2	13			Push button 2

Listen for [ɛ]. You will hear two words. [ɛ] is in the second word. You will press button 2 after you hear [ɛ].

2	14	ɑp	ɛp	Push button 2
2	15	ɑb	ɛb	Push 2
2	16	uv	ɛv	2
2	17	vu	vɛ	2
2	18	bɑ	bɛ	2
2	19	pɑ	pɛ	2
2	20	ɑd	ɛd	2
1	21			Push button 1

Listen for [ɛ]. You will hear two words. When [ɛ] is in the second word, you will press button 2. When [ɛ] is in the first word, you will press button 1.

1	22	εp	ap	Push 1
1	23	εb	ab	1
2	24	ab	εb	Push 2
2	25	ba	bε	2
2	26	uv	εv	2
2	27	pu	pε	2
1	28	tε	ta	1
1	29	εd	jud	1
1	30	gε	gɔ	1
2	31	mo	mε	2
1	32	εp	ap	1

Program

1	1	εp	ap	
1	2	εb	ab	
1	3	εm	um	
2	4	up	εm	
2	5	ib	εn	
1	6	εz	ɔɪz	
2	7	ag	εs	
1	8	εð	aʊk	
2	9	jutʃ	εv	
1	10	εr	olɔ	
1	11	pε	pa	
2	12	tu	tε	
2	13	tɔ	pε	
2	14	dʒaɪ	gε	
1	15	sε	bi	
1	16	dε	θju	
1	17	mε	nu	
1	18	jε	hɔ	
2	19	wi	kε	
2	20	paʊ	bε	
3	1			Push button 3
3	2			Push 3
3	3			3
3	4	εp	εp	Push 3
3	5	εz	εz	3
3	6	εk	εk	3
3	7	pε	pε	Push 3
3	8	zε	zε	3
3	9	kε	kε	3
1	10	εd	aʊd	Push 1
1	11	dε	daʊ	1
2	12	ɔdʒ	εdʒ	Push 2
2	13	dεɔ	dʒε	2
3	14	εʃ	εʃ	Push 3
3	15	εtʃ	εtʃ	3
3	16	lε	lε	3
3	17	εv	εv	3
3	21	εp	εp	
3	22	εm	εm	
2	23	um	εm	
1	24	εt	ɔp	
2	25	aɪk	εg	
3	26	nε	nε	
3	27	bε	bε	
3	28	tε	dε	
1	29	εr	ɔɪð	
1	30	εf	ʌʃ	
2	31	ʒo	rε	
2	32	dʊ	θε	
1	33	ʃε	vɝ	
2	34	wæ	kε	
3	35	εs	εs	
3	36	zε	tε	
3	37	pε	mε	
1	38	wε	ve	
1	39	hε	nɪ	
3	40	εr	εr	
4	1			Push button 4
4	2			Push 4
4	3			4
4	4	ɔm	ɔm	Push 4
4	5	aʊf	aʊf	4
4	6	la	la	4
4	7	gu	gu	4
4	8	ɔɪv	ɔɪv	4
4	9	jub	jub	4
1	10	εd	ɔd	1
1	11	dε	dɔ	1
2	12	ik	εk	2
2	13	ki	kε	2
3	14	εt	εt	3
3	15	tε	tε	3
3	16	gε	gε	3
2	17	saʊ	sε	2
1	18	vε	vi	1
4	19	ni	ni	4
4	20	im	im	4
2	21	iʃ	εs	2
3	22	εz	εz	3
1	23	εp	aʊp	1
4	24	ɔb	ɔb	4
4	41	am	am	
4	42	ɔn	ɔn	
2	43	lʌ	hwε	
4	44	mju	mɔ	
3	45	kε	kε	
3	46	vε	fε	
1	47	dʒε	θʊ	
3	48	pε	nε	
4	49	sa	si	
4	50	fɔ	vaʊ	

1	51	lɛ	gʌ
3	52	ðɛ	mɛ
2	53	ok	ɛn
4	54	vaɪ	vɔɪ
4	55	rʊ	wi
1	56	ɛr	ɔr
2	57	æk	ɛt
3	58	tɛ	dɛ
4	59	zi	su
1	60	ɛtʃ	etʃ
2	61	jum	ɛk
1	62	fɛ	paʊ
1	63	hɛ	ko
1	64	ɛm	ʊg
2	65	ɪv	ɛk
3	66	ɛb	ɛd
3	67	ɛθ	ɛʃ
3	68	dʒɛ	hwɛ
2	69	ɪd	ɛz
4	70	ɪp	ʌt
1	71	lɛ	θæ
1	72	nɛ	hɪ
2	73	ʒʌ	mɛ
2	74	ɝʃ	ɛð
2	75	eθ	ɛb
2	76	ɪŋ	ɛt
4	77	gæ	ne
1	78	ɛr	ɪr
4	79	re	jaɪ
1	80	ɛd	ɝf
2	81	ʌg	ɛz
3	82	fɛ	lɛ
4	83	tʃɝ	dʌ
1	84	ʃɛ	je
2	85	ʌg	ɛp
2	86	ɑr	ɛr
1	87	wɛ	zæ
3	88	ɛr	ɛr
4	89	mæ	nɪ
3	90	sɛ	ʃɛ

[ɛ] I - 3

Training Tape Leader

1	1	Push button 1
4	2	Push button 4
2	3	Push button 2
3	4	Push 3
1	5	Push 1

Listen for [ɛ]. You will hear two words. [ɛ] is in the first word. You will press button 1 after you hear [ɛ].

1	6	ɛ	o	Push button 1
1	7	ɛs	og	Push 1
1	8	jɛs	nog	1
1	9	jɛt	nab	1
1	10	lɛt	ʃat	1
2	11			Push button 2

Listen for [ɛ]. You will hear two words. [ɛ] is in the second word. You will press button 2 after you hear [ɛ].

2	12	o	ɛ	Push button 2
2	13	og	ɛs	Push 2
2	14	nog	jɛs	2
2	15	nab	jɛt	2
2	16	ʃat	lɛt	2
1	17			Push button 1

Listen for [ɛ]. You will hear two words. When [ɛ] is in the second word, you will press button 2. When [ɛ] is in the first word, you will press button 1.

1	18	ɛs	og	Push 1
1	19	jɛs	nog	1
2	20	nab	jɛt	Push 2
2	21	ʃap	lɛt	2
2	22	aʊs	ɛv	2
1	23	fɛ	su	1
1	24	fɛl	sub	1
2	25	ɑr	ɛb	2
2	26	ɑrz	ɛbz	2
1	27	ɛp	og	1

Program

1	1	ɛ	o
1	2	ɛs	og
1	3	jɛs	nog
2	4	nɑdʒ	jɛs
2	5	mɔf	jɛt
1	6	sɛ	bɔ
2	7	bɔv	sɛt
1	8	ɛn	ip
2	9	ipt	ɛnd
1	10	sɛnd	fipt
1	11	ɛd	uf
2	12	muf	rɛd
2	13	aʊs	ɛt
2	14	tʃaʊs	gɛt
1	15	ɛm	ɑʒ
1	16	ðɛm	tɑʒ
1	17	mɛ	su

1	18	mɛn	sub	
2	19	tɔ	wɛ	
2	20	tɔp	wɛl	
3	1			Push button 3
3	2			Push 3
3	3			3
3	4	ɛd	ɛd	Push 3
3	5	ɛf	ɛf	3
3	6	mɛ	mɛ	Push 3
3	7	wɛ	wɛ	3
3	8	wɛt	wɛt	3
3	9	lɛt	lɛs	3
1	10	tɛl	tɔʒ	1
2	11	poθ	pɛt	2
3	12	sɛl	sɛl	3
3	13	fɛl	fɛd	3
2	14	ðaɪk	ðɛn	2
1	15	pɛn	waʊz	1
3	16	gɛt	lɛt	3
3	17	sɛt	sɛnd	3
3	21	fɛl	fɛl	
3	22	fɛl	fɛlt	
2	23	wʊθ	hwɛn	
1	24	hɛd	dʒaɪk	
2	25	ðɔɪm	tɛl	
3	26	ɛnd	ɛnd	
3	27	ɛnd	ɛni	
3	28	sɛnd	sɛnt	
1	29	bɛn	riz	
1	30	lɛt	djuv	
2	31	mɝb	jɛt	
2	32	rʌd	ðɛn	
1	33	lɛft	seð	
2	34	fætʃ	bɛst	
3	35	ɛr	ɛr	
3	36	kɛr	kɛr	
3	37	kɛr	ʃɛr	
1	38	tɛn	vɪʃ	
1	39	drɛs	nɜk	
3	40	bɛd	sɛd	
4	1			Push button 4
4	2			Push 4
4	3			4
4	4	og	og	Push 4
4	5	ɔv	ɔv	4
4	6	bu	bu	Push 4
4	7	tɔ	tɔ	4
4	8	tɔn	tɔn	4
4	9	nof	nod	4
1	10	sɛd	sod	1
3	11	pɛt	sɛt	3
2	12	fɔl	fɛl	2
4	13	kɔɪt	fɔɪt	4

4	14	kot	nɑt	4
3	15	mɛt	nɛt	3
1	16	lɛd	laʊd	1
2	17	hɑp	hɛd	2
4	18	mɑz	kɑt	4
4	19	zok	zug	4
4	41	no	no	
4	42	tɔz	tɔz	
2	43	zug	hɛlp	
4	44	miʃ	mis	
3	45	sɛt	bɛt	
3	46	mɛn	bɛn	
1	47	stɛp	blʊtʃ	
3	48	wɛl	bɛl	
4	49	kɑð	gið	
4	50	jod	waʊp	
1	51	dɛd	pɪŋ	
3	52	ðɛr	tʃɛr	
2	53	hwæʃ	sɛlf	
4	54	fi	fil	
4	55	bɔɪ	tru	
4	56	laɪk	daʊn	
2	57	ep	ɛr	
3	58	lɛs	kɛpt	
4	59	kɔl	faɪv	
1	60	wɛnt	kʌt	
2	61	pɝ	hɛld	
1	62	nɛk	vɔɪs	
1	63	rɛst	kɪŋ	
1	64	hwɛr	ðʌdʒ	
2	65	jæp	rɛd	
3	66	tɛl	tɛn	
3	67	lɛs	bɛst	
3	68	nɛkst	kɛr	
2	69	ðez	ðɛn	
4	70	nid	pæs	
1	71	ðɛr	smaɪl	
1	72	wɛnt	mʌtʃ	
2	73	θɪŋ	lɛt	
2	74	ʃɜd	hwɛn	
2	75	heft	hɛd	
2	76	næz	hɛld	
4	77	wɔk	jʌŋ	
1	78	hɛlp	hæv	
4	79	dɔr	dɪr	
1	80	nɛkst	meʃ	
2	81	flɝθ	sɛlf	
3	82	ðɛm	kɛpt	
4	83	kʊd	lʌv	
1	84	lɛft	fɔr	
2	85	bɜm	fɛlt	
1	86	fɛr	kɑr	
1	87	drɛs	læf	
3	88	ðɛr	hwɛr	

4	89	med	taʊn	
3	90	stɛp	gɛt	

[ɛ] I - 4

Training Tape Leader

1	1			Push button 1
4	2			Push button 4
2	3			Push button 2
3	4			Push 3
1	5			Push 1

Listen for [ɛ]. You will hear two words. [ɛ] is in the first word. You will press button 1 after you hear [ɛ].

1	6	sɛlf	so	Push button 1
1	7	sɛlf	ɔlo	Push 1
1	8	sɛlf	hold	1
1	9	lɛs	bʌg	1
1	10	bɛd	wɔk	1
2	11			Push button 2

Listen for [ɛ]. You will hear two words. [ɛ] is in the second word. You will press button 2 after you hear [ɛ].

2	12	so	sɛlf	Push button 2
2	13	ɔlo	sɛlf	Push 2
2	14	hold	sɛlf	2
2	15	bʌg	lɛs	2
2	16	wɔk	bɛd	2
1	17			Push button 1

Listen for [ɛ]. You will hear two words. When [ɛ] is in the second word, you will press button 2. When [ɛ] is in the first word, you will press button 1.

1	18	sɛlf	so	Push 1
1	19	sɛlf	sop	1
2	20	hold	lɛs	Push 2
2	21	wɔk	bɛd	2
1	22	lɛt	dʌz	1
2	23	dʌzən	lɛft	2
2	24	hwaɪ	bɛl	2
1	25	tɛl	hwaɪt	1
1	26	bɛr	bɔɪz	1
2	27	nat	fɛr	2
1	28	sɛlf	so	1

Program

1	1	sɛlf	so	
1	2	maɪsɛlf	ɔlso	
1	3	hɪmsɛlf	hold	
2	4	lɜn	hɝsɛlf	
2	5	frʌm	ðɛmsɛlvz	
1	6	lɛs	bɪg	
2	7	kænt	ənlɛs	
1	8	bɛd	wik	
2	9	ple	tɛr	
1	10	hɛlp	stap	
1	11	hɛlpɚ	stapɚ	
2	12	not	jɛt	
2	13	saʊnd	hwɛn	
2	14	wʌn	mɛn	
1	15	lɛft	bɪl	
1	16	tɛn	mɪl	
1	17	tɛnt	mɪlk	
1	18	tɛl	dʌz	
2	19	dʌzən	tɛlɪŋ	
2	20	gɝl	hɛd	
3	1			Push button 3
3	2			Push 3
3	3			3
3	4	ɛd	ɛd	Push 3
3	5	ɛl	ɛl	3
3	6	sɛ	sɛ	Push 3
3	7	bɛ	bɛ	3
3	8	bɛl	bɛl	3
3	9	jɛs	lɛs	3
1	10	bɛt	bol	1
2	11	taɹd	lɛd	2
3	12	sɛl	sɛl	3
3	13	sɛlf	sɛnd	3
2	14	mun	pɛt	2
1	15	rɛst	raɪt	1
3	16	bɛl	tɛl	3
3	17	bɛst	tɛnt	3
3	21	frɛnd	sɛnd	
3	22	lɛtɚ	bɛtɚ	
2	23	tʃɛndʒ	rɛdi	
1	24	ɛdʒ	ɪtʃ	
2	25	old	ɛls	
3	26	sɛt	pɛt	
3	27	ðɛn	mɛn	
3	28	rɛst	bɛst	
1	29	nɛkst	hɔrs	
1	30	ɛni	æt	
2	31	fætɚ	ɛniθɪŋ	
2	32	əraʊnd	ɛvri	
1	33	ɛvriθɪŋ	hæpi	
2	34	ʌndɚ	sɛkənd	

3	35	rɛd	rɛdi	
3	36	bɛt	bɛtɚ	
3	37	kɛr	kɛri	
1	38	hɛlθ	θɪŋk	
1	39	kɛpt	ðæt	
3	40	hwɛr	ðɛr	
4	1			Push button 4
4	2			Push 4
4	3			4
4	4	og	og	Push 4
4	5	ɔv	ɔv	4
4	6	bu	bu	Push 4
4	7	taʊ	taʊ	4
4	8	taʊn	taʊn	4
4	9	nop	not	4
1	10	mɛt	maɪt	1
3	11	sɛnt	sɛnd	3
2	12	bɔl	bɛl	2
4	13	kul	kul	4
4	14	tul	tɔk	4
3	15	bɛst	rɛst	3
1	16	lɛd	tod	1
2	17	nɑt	pɛt	2
4	18	noz	rod	4
4	19	zug	sop	4
4	41	no		not
4	42	nʌn		pepɚ
2	43	bʌt		bɛst
4	44	ril		hæf
3	45	wɛnt		sɛnt
3	46	ɛr		fɛr
1	47	fɛlt		dʌn
3	48	wɛl		tɛl
4	49	bəkɔz		pɑrti
4	50	ðɪs		ðæt
1	51	drɛs		ʌðɚ
3	52	gɛt		mɛt
2	53	jɪr		stɛp
4	54	fæmli		bebi
4	55	kʌntri		bɪznʌs
4	56	hɑrt		laɪt
2	57	mʌnθ		ðɛm
3	58	hɛld		hɛlθ
4	59	ʃɪp		ʃɑp
1	60	lɛt		juz
2	61	gev		bɛn
1	62	ɛni		əˈlɔŋ
1	63	ɛvɚ		ˈopən
1	64	haʊ ˈɛvɚ		ˈpipəl
2	65	wɑtɚ		mɛni
3	66	ɛvɚ		ˈnɛvɚ
3	67	ˈsɛvən		ˈsɛvənti
3	68	ɛni		ɛniwe

2	69	wʊmən	vɛri
4	70	dɑlɚ	mʌni
1	71	ɛntɚ	iðɚ
1	72	bɛr	gɔn
2	73	hɑrd	fɛl
2	74	smɔl	wɛst
2	75	dɛʌst	frɛʃ
2	76	ʌp	ɛnd
4	77	mek	stænd
1	78	nɛk	wɜk
4	79	wʊd	nen
1	80	ɛvri	rum
2	81	kʌmɪŋ	ɛvriθɪŋ
3	82	spɛnd	spɛnt
4	83	hæpən	lɪtəl
1	84	ˈɛnəmi	ˈtekən
2	85	səˈpoz	ɛˈskep
1	86	əˈgɛn	kaɪnd
1	87	ˈjɛlo	ˈdɑktɚ
2	88	ʃʊd	ˈkwɛstʃən
1	89	əˈmɛrəkə	ʃo
3	90	ɛkˈsɛpt	ɛkˈspɛkt

[ɛ] I - 5

Training Tape Leader

1	1		Push button 1
4	2		Push button 4
2	3		Push button 2
3	4		Push 3
1	5		Push 1

Listen for [ɛ]. You will hear one word. [ɛ] is at the beginning of the word. You will press button 1 after you hear [ɛ].

1	6	ɛp	Push button 1
1	7	ɛb	Push 1
1	8	ɛd	1
1	9	ɛr	1
1	10	ɛs	1
1	11	ɛz	1
3	12		Push button 3

Listen for [ɛ]. You will hear one word. [ɛ] is at the end of the word. You will press button 3 after you hear [ɛ].

3	13	pɛ	Push button 3
3	14	nɛ	Push 3
3	15	gɛ	3
3	16	mɛ	3

3	17	fɛ	3
3	18	bɛ	3
2	19		Push button 2

Listen for [ɛ]. You will hear one word. [ɛ] is in the middle of the word. You will press button 2 after you hear [ɛ].

2	20	pɛt	Push button 2
2	21	bɛd	Push 2
2	22	ðɛm	2
2	23	gɛt	2
2	24	hwɛr	2
2	25	jɛs	2
1	26		Push button 1

You will hear one word. Listen for [ɛ]. When [ɛ] is at the end, you will press button 3. When [ɛ] is in the middle, you will press button 2. When [ɛ] is at the beginning, you will press button 1.

1	27	ɛp	Push 1
2	28	pɛt	Push 2
3	29	pɛ	Push 3
3	30	gɛ	3
1	31	ɛb	1
2	32	rɛb	2
1	33	ɛr	1
3	34	mɛ	3
2	35	mɛs	2
2	36	bɛd	2
3	37	nɛ	3
1	38	ɛp	1

Program

1	1	ɛp	
3	2	pɛ	
2	3	pɛt	
3	4	nɛ	
1	5	ɛb	
3	6	gɛ	
1	7	ɛm	
3	8	mɛ	
2	9	mɛn	
2	10	tɛn	
1	11	ɛnd	
2	12	jɛs	
2	13	lɛb	
1	14	ɛð	
2	15	mɛp	
1	16	ɛvɚ	
2	17	wɛl	
1	18	ɛr	
1	19	ɛs	
3	20	fɛ	
2	21	ðɛr	
2	22	bɛd	
1	23	ɛvri	
2	24	ðɛm	
1	25	ɛro	
2	26	gɛt	
2	27	hwɛn	
2	28	hɛd	
2	29	nɛk	
2	30	rɛst	
4	1		Push button 4
4	2		Push 4
4	3		4
4	4	aɪm	4
4	5	not	4
4	6	dʒɔ	4
4	31	no	
4	32	un	
4	33	pag	
3	34	bɛ	
1	35	ɛʒ	
2	36	rɛd	
4	37	aʊt	
4	38	nu	
4	39	kɔst	
2	40	kɛr	
1	41	ɛni	
2	42	hɛlp	
2	43	bɛst	
4	44	baɪ	
2	45	lɛft	
4	46	ɔf	
1	47	ɛko	
2	48	tɛl	
2	49	drɛs	
2	50	hwɛr	
2	51	nɛkst	
1	52	ɛvɚ	
1	53	ɛvriθɪŋ	
4	54	ʌs	
2	55	hɛr	
2	56	sɛd	
2	57	lɛg	
4	58	bæk	
2	50	bɛd	
1	60	ɛg	
2	61	wɛr	
4	62	edʒ	
2	63	sɛl	

2	64	gɛs
1	65	ɛni
4	66	hɝd
1	67	ɛls
2	68	dɛd
4	69	ʃɔrt
2	70	sɛnd
1	71	ɛdʒ
4	72	vɔɪs
2	73	ɪnstɛd
4	74	lɪv
2	75	skwɛr
4	76	θru
2	77	fɛlo
4	78	gret
2	79	rɛdi
2	80	mɛni
2	81	wɛðɚ
1	82	ˈɛnəmi
4	83	wɪndo
2	84	twɛnti
2	85	əmɛrəkə
4	86	pɝsən
2	87	ˈhɛvən
4	88	æpəl
1	89	ɛniθɪŋ
4	90	əˈnʌðɚ

[ɛ] I - 6

Training Tape Leader

1	1	Push button 1
4	2	Push button 4
2	3	Push button 2
3	4	Push 3
1	5	Push 1

Listen for [ɛ]. When the first word has [ɛ], you will press button 1. When the second word has [ɛ], you will press button 2.

1	6	mɛs	mɑs	Push button 1
2	7	lɑt	lɛt	Push 2
2	8	hæd	hɛd	2
1	9	ɛr	ɔr	1
2	10	ædʒi	ɛdʒi	2
1	11	fɛr	fɑr	1
3	12			Push button 3

Listen for [ɛ]. When both words have [ɛ], you will press button 3. When neither word has [ɛ], you will press button 4.

3	13	mɛs	mɛs	Push button 3
3	14	lɛt	lɛt	Push 3
4	15	no	nʌn	Push 4
4	16	hwaɪ	nɑt	4
3	17	ɛr	ɛr	3
3	18	ɛdʒi	ɛdʒi	3
1	19			Push button 1

Listen for [ɛ]. You will hear two words. When [ɛ] is in the first word, you will press button 1. When [ɛ] is in the second word, you will press button 2. When [ɛ] is in both words, you will press button 3. When [ɛ] is in neither word, you will press button 4.

1	20	mɛs	mus	Push button 1
2	21	lɑt	lɛt	Push 2
3	22	hɛd	hɛd	3
4	23	no	nʌn	4
3	24	ɛr	ɛr	3
4	25	hwaɪ	nɑt	4
2	26	fɔr	fɛr	2
1	27	ɛdʒi	ædʒi	1
1	28	rɛst	rust	1
2	29	ɑr	ɛr	2
4	30	ɔl	ɔl	4
3	31	wɛl	wɛl	3
1	32	mɛn	mun	1

Program

1	1	mɛn	mun
2	2	lɑt	lɛt
3	3	jɛs	jɛs
4	4	ɔl	ɔl
1	5	ɛnd	end
3	6	ɛnd	ɛnd
4	7	edʒ	edʒ
2	8	hulp	hɛlp
1	9	drɛs	dres
1	10	bɛst	bist
2	11	rɑd	rɛd
1	12	tɛl	tol
2	13	wint	wɛnt
2	14	aɪvɚ	ɛvɚ
2	15	gɔɪt	gɛt
1	16	nɛk	nɑk
1	17	ɛr	ɔr
2	18	rʌst	rɛst
1	19	sɛd	sɔd
2	20	kɔr	kɛr
2	21	lɔg	lɛg
2	22	tun	tɛn

3	23	wɛl	wɛl
3	24	hwɛn	hwɛn
2	25	æni	ɛni
2	26	stɑp	stɛp
2	27	bin	bɛn
1	28	hɛd	hæd
4	29	θri	θri
1	30	ðɛm	ðem
1	31	gɛt	gʌt
2	32	fɔlt	fɛlt
2	33	jæt	jɛt
4	34	ɑrm	ɑrm
2	35	ðæn	ðɛn
3	36	ɛdʒ	ɛdʒ
2	37	bæd	bɛd
2	38	dɪd	dɛd
1	39	wɛst	wɜst
3	40	rɛdi	rɛdi
2	41	frʌnd	frɛnd
1	42	gɛs	gæs
1	43	sɛvən	sɪvən
1	44	hɛr	hɪr
1	45	ɛg	ɜg
1	46	hɛlθ	hʌlθ
1	47	ɛnd	ænd
3	48	frɛntʃ	frɛntʃ
1	49	bɛl	bɪl
2	50	fɪl	fɛl
2	51	bʌtɚ	bɛtɚ
2	52	mʌni	mɛni
1	53	rɛd	red
1	54	sprɛd	spred
4	55	fit	fʊt
2	56	letɚ	lɛtɚ
2	57	læft	lɛft
3	58	tʃɛr	tʃɛr
1	59	hɛld	hɪld
2	60	sænd	sɛnd
1	61	kɛpt	kæp
1	62	sɛd	sæd
1	63	ɛnəmi	enəmi
4	64	hom	hæm
1	65	hɛr	hɝ
4	66	ɪr	ɔr
2	67	smɔl	smɛl
3	68	nɛk	nɛkst
2	69	edʒ	ɛdʒ
3	70	fɛlo	jɛlo
1	71	lɛs	læst
1	72	nɛvɚ	nɪvɚ
3	73	wɛr	hwɛr
1	74	frɛnd	frænd
2	75	pʊr	pɛr
1	76	rɛd	rɪd
2	77	lɪd	lɛd
3	78	bɛr	fɛr
1	79	sɛt	sɪt
4	80	fɑr	fɔr
4	81	sæt	sit
1	82	əgɛn	əgʌn
2	83	hɜsælf	hɜsɛlf
3	84	prɛs	drɛs
1	85	əmɛrɪkə	əmɑrɪkə
3	86	jɛt	dʒɛt
4	87	mæs	mɪs
2	88	haʊɪvɚ	haʊɛvɚ
3	89	kɛri	bɛri
1	90	ɛskep	æskep

[ɛ] II - 1

1	ɔ
2	u
3	i
4	ɛ
5	ɑ
6	ɛ
7	u
8	ɛ
9	ɛ
10	aɪ
11	aʊ
12	ɔɪ
13	ɛ
14	ɛ
15	ju
16	ɛ
17	ʊ
18	ɛ
19	ɝ
20	ɛ
21	i
22	ɛ
23	ɔ
24	u
25	aɪ
26	ɛ
27	o
28	ɛ
29	ɛ
30	æ
31	ɛ
32	ʌ
33	u
34	ɛ
35	ɪ
36	ɛ

37	ɑ
38	ɛ
39	ɛ
40	e
41	ɛ
42	ɛ
43	aʊ
44	ɛ
45	ɛ
46	æ
47	ɛ
48	ɛ
49	ɛ
50	ɛ

[ɛ] II - 2

1	ɑm
2	ɔd
3	uz
4	ɛs
5	aɪs
6	ɛt
7	ot
8	ɛg
9	ɛd
10	ɔn
11	ɛn
12	ɛnd
13	aɪd
14	ɛdʒ
15	ɛdʒi
16	mɑm
17	nun
18	baɪt
19	bɛd
20	hɑt
21	hɛd
22	kip
23	kɛpt
24	wɛl
25	rid
26	rɛd
27	drɛs
28	sil
29	sɛl
30	sɛlf
31	ʃɛlf
32	ivən
33	ɛvɚ
34	ovɚ
35	ɛvri
36	no
37	sno
38	mɔ
39	lɛ
40	tʃu
41	fɛ
42	ʃo
43	ɛg
44	ɛgz
45	laɪt
46	lɛt
47	ni
48	ɛni
49	sæd
50	sɛt
51	ɛls
52	ðo
53	ðɛm
54	ðɛn
55	ðæt
56	ɛn
57	ɛntɚ
58	bʌt
59	bɛt
60	ɛl
61	hɛlo
62	hɛlp
63	wet
64	ɪtʃ
65	ɛks
66	ɛksɛpt
67	ɛkstrə
68	nʌn
69	jɛs
70	jɛl
71	jɛlo
72	wɝ
73	wɜk
74	ɛr
75	kɛr
76	tʃɛr
77	ɛrɚ
78	ɛrplen
79	hwɛr
80	hwɛn
81	ɛnd

[ɛ] II - 3

1	ɑm
2	ɔd
3	ɛd
4	ɛs
5	aʊt
6	ɛt
7	uz

8 ɛz
9 ɛdʒ
10 to
11 tɛ
12 tɛl
13 mu
14 mɛ
15 mɛt
16 baɪ
17 bɛ
18 bɛd
19 so
20 sɛ
21 sɛz
22 rɔ
23 rɛ
24 rɛst
25 ðo
26 ðɛ
27 ðɛm
28 rid
29 rod
30 rɛd
31 aʊɚ
32 ɛr
33 ɛrɚ
34 fɛrɚ
35 ɑl
36 ɛl
37 wɛl
38 swɛl
39 swit
40 wet
41 æt
42 bæt
43 ɛg
44 ɛgz
45 ɛgzækt
46 ɛs
47 gɛs
48 gɛt
49 ɛn
50 ɛnd
51 lɛnd
52 lɛd
53 sɛd
54 ɛks
55 ɛkstrə
56 ɛm
57 ðɛm
58 sɛl
59 sɛlf
60 sɛlfɪʃ

61 ɛv
62 ɛvɚ
63 ɛvri
64 ɛr
65 ʃɛr
66 tʃɛr
67 ðɛr
68 ɛrplen
69 ɛl
70 ɛlm
71 ɛls
72 bɛl
73 bɛt
74 bɛtɚ
75 bɛst
76 nɛst
77 nɛkst
78 ɛksɛpt
79 ɛg
80 ɛghɛd

[ɛ] II - 4

1 ɛm
2 ɛt
3 ɛd
4 ɛde
5 mɛ
6 nɛ
7 lɛ
8 bɛ
9 bɛd
10 bɛt
11 bɛtɚ
12 bɛst
13 ɛks
14 ɛkst
15 ɛkstrə
16 nɛkst
17 nɛst
18 nɛt
19 tɛ
20 dɛ
21 sɛ
22 sɛl
23 ɛd
24 ɛdʒ
25 ɛdʒi
26 skɛdʒ
27 skɛdʒul
28 ʃɛ
29 ʃɛr
30 tʃɛr

31 ɛri
32 vɛri
33 vɛri naɪs
34 ɛz
35 sɛz
36 hi sɛz
37 hi sɛz so
38 ɛl
39 tɛl
40 tɛlɪŋ
41 tɛlɪŋ mi
42 gɛ
43 gɛt
44 gɛt ɪt
45 ɛg
46 lɛg
47 ə lɛg
48 lɛt
49 lɛts
50 lɛts go
51 hɛd
52 əhɛd
53 hiz əhɛd
54 ɛni
55 mɛni
56 mɛni mɔr
57 ɛr
58 ðɛr
59 ðɛr hɪr
60 wɛn
61 wɛnt
62 hi wɛnt
63 hi wɛnt hom
64 gɛs
65 gɛsɪŋ
66 gɛsɪŋ gem
67 bɛd
68 tu bɛd
69 go tu bɛd
70 sɛt
71 sɛt ɪt
72 sɛt ɪt daʊn
73 lɛs
74 lɛsən
75 ðə lɛsən
76 fɛl
77 fɛl daʊn
78 ʃi fɛl daʊn
79 ɛnd
80 ðə ɛnd

[ɛ] II - 5

1 ɛd
2 ɛdʒ
3 ɛdʒi
4 rɛ
5 rɛd
6 brɛd
7 brɛθ
8 ɛv
9 ɛvɚ
10 nɛvɚ
11 ɛl
12 ɛls
13 ɔr ɛls
14 sɛl
15 sɛlf
16 maɪsɛlf
17 bɛt
18 bɛtɚ
19 bɛtɚ nat
20 sɛz
21 sɛz so
22 hi sɛz so
23 ɛri
24 vɛri
25 vɛri naɪs
26 lɛs
27 lɛsən
28 ðə lɛsən
29 rɛst
30 ðə rɛst
31 ɔl ðə rɛst
32 ðɛm
33 si ðɛm
34 go si ðɛm
35 bɛst
36 ðə bɛst
37 ðə bɛst wʌn
38 ɛgz
39 tu ɛgz
40 hæm ən ɛgz
41 lɛft
42 hi lɛft
43 hwɛn hi lɛft
44 hwɛn hi lɛft ʌs
45 sɛt
46 sɛt ɪt
47 sɛt ɪt ðɛr
48 hi sɛt ɪt ðɛr
49 pɛnsəl
50 ə pɛnsəl
51 pɛn ən pɛnsəl
52 rɛst
53 rɛst naʊ
54 ə rɛst

55 ə rɛst ɪn bɛd
56 hɛn
57 ðə hɛn
58 ðɛrz ðə hɛn
59 lɛt
60 lɛt hɝ
61 lɛt hɝ tɛl
62 lɛt hɝ tɛl ʌs
63 bɛst
64 ðə bɛst
65 ðə bɛst mɛn
66 mɛn
67 mɛni
68 mɛni sɛd
69 mɛni sɛd so
70 ðɛrz
71 ðɛrz hɪz
72 ðɛrz hɪz pɛnsəl
73 tɛl
74 wi tɛl
75 lɛts tɛl
76 lɛts tɛl hɝ
77 jɛs
78 se jɛs
79 aɪ se jɛs
80 aɪ se jɛs naʊ

[ɛ] II - 6

1 sɛd
2 hi sɛd
3 hi sɛd so
4 bɛst
5 ðə bɛst
6 ðə bɛst mɛn
7 brɛkfəst
8 æt brɛkfəst
9 æt brɛkfəst taɪm
10 rɛst
11 ðə rɛst
12 ðə rɛst ɑr
13 ðə rɛst ɑr ðɛr
14 tɛl
15 tɛlɪŋ
16 tɛlɪŋ mi
17 ðɛr tɛlɪŋ mi
18 fɛd
19 fɛd ʌs
20 fɛd ʌs ðɛn
21 ðə bɛd
22 ɔf ðə bɛd
23 fɛl ɔf ðə bɛd
24 hi fɛl ɔf ðə bɛd
25 brɛd
26 ɛni brɛd
27 ɪz ðɛr ɛni brɛd
28 rɛdi
29 aɪm rɛdi
30 aɪm rɛdi hi sɛz
31 wɛr
32 wɛr ðə rɛd
33 wɛr ðə rɛd drɛs
34 gɛt
35 gɛt ɪt
36 ju gɛt ɪt
37 hwɛn ju gɛt ɪt
38 pɛnsəl
39 maɪ pɛnsəl
40 hwɛrz maɪ pɛnsəl
41 ðɛrz maɪ pɛnsəl
42 lɛts
43 lɛts go
44 lɛts go ðɛr
45 lɛts go ðɛr ðɛn
46 ðə slɛd
47 ple wɪθ ðə slɛd
48 lɛts ple wɪθ ðə slɛd
49 lɛts ple wɪθ ðə pɛt
50 ðə stɛrz
51 daʊn ðə stɛrz
52 fɛl daʊn ðə stɛrz
53 hi fɛl daʊn ðə stɛrz
54 tʃɛkɚz
55 ple tʃɛkɚz
56 lɛts ple tʃɛkɚz
57 ðə mɛn ple tʃɛkɚz
58 mɛt
59 mɛt ə frɛnd
60 aɪ mɛt ə frɛnd
61 sɛnd
62 sɛnd ə lɛtɚ
63 gɛt tə sɛnd ə lɛtɚ
64 aɪ gɛt tə sɛnd ə lɛtɚ
65 haʊ mɛni
66 haʊ mɛni ɑr ðɛr
67 ðɛr ɑrnt ɛni
68 hwɛr ɑr ðɛ
69 rɛd hɛr
70 ʃi hæz rɛd hɛr
71 ʃiz ə rɛd hɛd
72 ə pɛr
73 ə pɛr əv sɑks
74 ðæts maɪ bɛst pɛr
75 aɪm wɛrɪŋ maɪ bɛst pɛr
76 jɛs ɚ no
77 aɪ sɛd jɛs tə ðɛm
78 lɛts se jɛs

79 lɛts tɛl ðɛm
80 lɛts stap ɪnstɛd

[ɛ] II - 7

1 rɛdi
2 lɛts gɛt rɛdi
3 gɛt jʊr pepɚ ŋ̩ pɛnsəl
4 maɪ dɛsk ɪz mɪsɪŋ
5 hwɛrz maɪ dɛsk
6 sɪt nɛkst tə mi
7 jʊr dɛsk ɪz bɛtɚ ðən maɪn
8 maɪ dɛsk wʌz tu mɛsi ɛniwe
9 hwɛrz ə pɛnsəl
10 ðɛrz wʌn
11 aɪ wɑnt ə rɛd pɛnsəl
12 juz ðə jɛlo wʌn ɪnstɛd
13 ðə jɛlo wʌn raɪts bɛtɚ
14 rɛdi fɔr ðə lɛsən
15 aɪm rɛdi lɛts stɑrt
16 ðə lɛsən ɪz izi
17 hi sɛz sʌmθɪŋ ðɛn aɪ se ɪt
18 hwɛn hi sɛz sʌmθɪŋ aɪ se ɪt tu
19 ðɛn hi sɛz sʌmθɪŋ ɛls
20 ðɛrz nʌθɪŋ ɛls
21 lɛts go naʊ
22 hwɛr ʃæl wi go
23 lɛts go ŋ̩ gɛt sʌmθɪŋ
24 du ju hæv ɛni mʌni
25 aɪ hæv tɛn sɛns
26 hi hæz sɛvən sɛns
27 haʊ mɛni sɛns də ju hæv
28 aɪ hæv twɛnti sɛns
29 lɛts gɛt sʌm aɪskrim
30 strɔbɛri aɪskrim ɪz gʊd
31 tʃɛri aɪskrim ɪz bɛtɚ
32 aɪd bɛtɚ nɑt hæv ɛni
33 aɪd bɛtɚ hæv sʌmθɪŋ ɛls ɪnstɛd
34 aɪl gɛt ə tʃɛri kok
35 aɪ gɛs wi bɛtɚ go
36 ðə rɛst wɛnt
37 ðə rɛst wɛnt hom ɔlrɛdi
38 ðe ɔlrɛdi wɛnt tə bɛd
39 ðə bɛdrumz ʌpstɛrz
40 lɛts go ʌpstɛrz
41 ɛvriwʌnz ɪn bɛd
42 lɛts gɛt ɪn bɛd
43 gɛt ʌp naʊ
44 brɛkfəst taɪm
45 lɛts it brɛkfəst
46 lɛts itbekən ŋ̩ ɛgz
47 aɪ laɪk frɛʃ ɛgz fɚ brɛkfəst
48 du ju wɑnt ɛni brɛd
49 jɛs aɪ wɑnt brɛd ŋ̩ bʌtɚ
50 də ju wɑnt ɛni dʒɛli
51 jɛs pʊt sʌm strɔbɛri dʒɛli ɔn
52 ɪz ðɛr ɛni dʒɛli lɛft
53 no ðɛr ɪzənt ɛni lɛft
54 hi gɑt ɛkstrə
55 no hi dɪdənt gɛt ɛkstrə
56 wɛl aɪ dɪdənt gɛt ɛni
57 tɛl hɝ tə gɛt ju sʌm
58 aɪ dont wɑnt ɛni mɔr brɛkfəst
59 lɛts go ple
60 lɛts ple ə rɛkɚd
61 dont ple ðə rɛkɚd vɛri laʊd
62 ðə rɛkɚdz vɛri kwaɪət
63 ɛvriwʌnz vɛri kwaɪət
64 ðɛr nɛvɚ vɛri laʊd
65 ðɛrz ðə skul bɛl
66 ðə skul bɛl ɪz vɛri laʊd
67 lɛts go tə skul
68 sɪt ɪn ðə tʃɛr
69 hi fɛl ɔf hɪz tʃɛr
70 hi fɜlt bæd ðɛn
71 ʃi gev hɪm ə prɛzənt
72 ðə prɛzənt wəz ə rɛd faɪɚ trʌk
73 ə bɪg rɛd faɪɚ ɛndʒən
74 ðə ɛndʒən hæd ə bɛl
75 hi fɛlt bɛtɚ ðɛn
76 ɛniwʌn wʊd
77 ɛniwʌn wʊd laɪk ə prɛzənt
78 sɛnd mi wʌn
79 hi sɛnt mi ə prɛzənt
80 lɛts go ple wɪθ maɪ prɛzənt

[ɪ]   BTT - 2

Listen for [ɪ]. You will hear one sound. After you hear [ɪ], you will press button 1.

1	1	ɪ	Push button 1
1	2	ɪ	Push 1
1	3	ɪ	Push 1
1	4	ɪ	1
1	5	ɪ	1
4	6		Push button 4

Now, you will hear one sound, but you will not hear [ɪ]. The sound is not [ɪ]. After you hear the sound, you will press button 4.

4	7	u	Push button 4
4	8	ɑ	Push 4
4	9	ɔ	Push 4
4	10	ju	4
4	11	aʊ	4
1	12		Push button 1

Listen for [ɪ]. You will hear one sound. If you don't hear [ɪ], you will press button 4. When you hear [ɪ], you will press button 1.

1	13	ɪ	Push 1
1	14	ɪ	1
1	15	ɪ	1
4	16	u	Push 4
4	17	ɑ	4
4	18	ɔ	4
1	19	ɪ	1
1	20	ɪ	1
4	21	ju	4
1	22	ɪ	1
4	23	aʊ	4
4	24	o	4
1	25	ɪ	1

[ɪ] I - 1

Traing Tape Leader

1	1	Push button 1
4	2	Push button 4
2	3	Push button 2
3	4	Push 3
1	5	Push 1

Listen for [ɪ]. You will hear one sound. After you hear [ɪ], you will press button 1.

1	6	ɪ	Push button 1
1	7	ɪ	Push 1
1	8	ɪ	1
4	9		Push button 4

Now, you will hear one sound, but you will not hear [ɪ]. The sound is not [ɪ]. After you hear the sound, you will press button 4.

4	10	u	Push button 4
4	11	ɑ	Push 4
4	12	ɔ	4
1	13		Push button 1

Listen for [ɪ]. You will hear one sound. If you don't hear [ɪ], you will press button 4. When you hear [ɪ], you will press button 1.

1	14	ɪ	Push 1
1	15	ɪ	1
4	16	u	Push 4
4	17	ɑ	4
1	18	ɪ	1
4	19	ɔ	4
4	20	o	4
1	21	ɪ	1
1	22	ɪ	1

Program

1	1	ɪ
1	2	ɪ
1	3	ɪ
4	4	ɑ
4	5	u
1	6	ɪ
4	7	ɑ
1	8	ɪ
4	9	ɔ
1	10	ɪ
4	11	aɪ
4	12	ju
1	13	ɪ
4	14	ɔɪ
4	15	aʊ
4	16	ju
1	17	ɪ
4	18	u
1	19	ɪ
1	20	ɪ
4	21	ɔ

4	22	ɑ
1	23	ɪ
1	24	ɪ
4	25	ɔɪ
1	26	ɪ
1	27	ɪ
4	28	o
1	29	ɪ
4	30	ʌ
1	31	ɪ
1	32	ɪ
4	33	ʊ
1	34	ɪ
4	35	e
1	36	ɪ
4	37	aʊ
4	38	aɪ
1	39	ɪ
4	40	e
1	41	ɪ
4	42	ɝ
1	43	ɪ
1	44	ɪ
1	45	ɪ
4	46	ɝ
1	47	ɪ
1	48	ɪ
4	49	aɪ
4	50	o
4	51	ʊ
4	52	ʌ
1	53	ɪ
4	54	i
4	55	ɛ
4	56	æ
4	57	u
1	58	ɪ
1	59	ɪ
1	60	ɪ
1	61	ɪ
1	62	ɪ
4	63	ʊ
4	64	e
1	65	ɪ
4	66	ɛ
1	67	ɪ
1	68	ɪ
1	69	ɪ
4	70	i
4	71	ɝ
1	72	ɪ
1	73	ɪ
4	74	ʌ
4	75	ɛ
4	76	i
1	77	ɪ
4	78	i
4	79	ɝ
4	80	ʊ
4	81	e
1	82	ɪ
4	83	ɛ
4	84	ʌ
1	85	ɪ
1	86	ɪ
4	87	ɛ
1	88	ɪ
1	89	ɪ
1	90	ɪ

[ɪ] I - 2

Training Tape Leader

1	1	Push button 1
4	2	Push button 4
2	3	Push button 2
3	4	Push 3
1	5	Push 1

Listen for [ɪ]. You will hear two words. [ɪ] is in the first word. You will press button 1 after you hear [ɪ].

1	6	ɪp	ɑp	Push button 1
1	7	ɪb	ɑb	Push 1
1	8	ɪv	uv	1
1	9	nɪ	nu	1
1	10	bɪ	bɑ	1
1	11	pɪ	pɑ	1
1	12	ɪd	ɑd	1
2	13			Push button 2

Listen for [ɪ]. You will hear two words. [ɪ] is in the second word. You will press button 2 after you hear [ɪ].

2	14	ɑp	ɪp	Push button 2
2	15	ɑb	ɪb	Push 2
2	16	uv	ɪv	2
2	17	nu	nɪ	2
2	18	bɑ	bɪ	2
2	19	pɑ	pɪ	2
2	20	ɑd	ɪd	2
1	21			Push button 1

Listen for [ɪ]. You will hear two words. When [ɪ] is in the second word, you will press button 2. When [ɪ] is in the first word, you will press button 1.

1	22	ɪp	ɑp	Push 1
1	23	ɪb	ɑb	1
2	24	ɑb	ɪb	Push 2
2	25	bɑ	bɪ	2
2	26	uv	ɪv	2
2	27	pu	pɪ	2
1	28	tɪ	tɑ	1
1	29	ɪd	jud	1
1	30	gɪ	gɔ	1
2	31	mo	mɪ	2
1	32	ɪp	ɑp	1

Program

1	1	ɪp	ɑp	
1	2	ɪb	ɑb	
1	3	ɪn	un	
2	4	up	ɪn	
2	5	ɔb	ɪv	
1	6	ɪz	ɔɪz	
2	7	ɑg	ɪs	
1	8	ɪð	aʊk	
2	9	jutʃ	ɪv	
1	10	ɪr	ɔʒ	
1	11	pɪ	pɑ	
2	12	tu	tɪ	
2	13	tɔ	pɪ	
2	14	dʒaɪ	gɪ	
1	15	sɪ	bo	
1	16	dɪ	θju	
1	17	mɪ	nu	
1	18	jɪ	hɔ	
2	19	kɔɪ	wɪ	
2	20	paʊ	bɪ	
3	1			Push button 3
3	2			Push 3
3	3			3
3	4	ɪp	ɪp	Push 3
3	5	ɪs	ɪs	3
3	6	ɪk	ɪk	3
3	7	mɪ	mɪ	3
3	8	gɪ	gɪ	3
3	9	bɪ	bɪ	3
1	10	ɪd	aʊd	Push 1
1	11	dɪ	daʊ	1
2	12	ɔdʒ	ɪdʒ	Push 2
2	13	dʒɔ	dʒɪ	2
3	14	ɪʃ	ɪʃ	Push 3
3	15	ɪl	ɪl	3
3	16	lɪ	lɪ	3
3	17	ɪv	ɪv	3
3	21	ɪp	ɪp	
3	22	ɪt	ɪt	
2	23	un	ɪn	
1	24	ɪd	ɔp	
2	25	aɪk	ɪg	
3	26	nɪ	nɪ	
3	27	bɪ	bɪ	
3	28	tɪ	dɪ	
1	29	ɪr	ɔɪð	
1	30	ɪf	ʌʃ	
2	31	ʒo	rɪ	
2	32	dæ	θɪ	
1	33	ʃɪ	vɝ	
2	34	wʊ	kɪ	
3	35	ɪz	ɪz	
3	36	pɪ	tɪ	
3	37	pɪ	mɪ	
1	38	wɪ	ve	
1	39	hɪ	ni	
3	40	ɪr	ɪr	
4	1			Push button 4
4	2			Push 4
4	3			4
4	4	ɔm	ɔm	Push 4
4	5	aʊf	aʊf	4
4	6	lɑ	lɑ	4
4	7	gu	gu	4
4	8	aʊv	aʊv	4
4	9	bju	bju	4
1	10	ɪd	ɔd	1
1	11	dɪ	dɔ	1
2	12	æk	ɪk	2
2	13	kɔɪ	kɪ	2
3	14	ɪd	ɪd	3
3	15	sɪ	sɪ	3
3	16	ɪp	ɪp	3
2	17	of	ɪf	2
1	18	ɪdʒ	aʊdʒ	1
4	19	juk	juk	4
4	20	zaʊ	zaʊ	
2	21	tʃɔ	tʃɪ	2
3	22	lɪ	lɪ	3
1	23	ɪs	ɔs	1
4	24	ɔb	ɔb	4
4	41	ɑm	ɑm	
4	42	ɔn	ɔn	
2	43	lʌ	hwɪ	
4	44	mju	mɔ	
3	45	k[illegible]	kɪ	
3	46	vɪ	fɪ	
1	47	dʒɪ	θʊ	
3	48	pɪ	mɪ	

4	49	sɑ	sæ
4	50	fɔ	vaʊ
1	51	lɪ	gʌ
3	52	ðɪ	mɪ
2	53	ok	ɪŋ
4	54	vaɪ	vɔɪ
4	55	ro	ræ
1	56	ɪr	ɔr
2	57	ɛk	ɪt
3	58	tɪ	dɪ
4	59	zæ	zo
1	60	ɪtʃ	etʃ
2	61	jum	ɪd
1	62	fɪ	paʊ
1	63	hɪ	ko
1	64	ɪθ	æg
2	65	iv	ɪk
3	66	ɪb	ɪd
3	67	ɪŋ	ɪŋ
3	68	dʒɪ	hwɪ
2	69	ɜd	ɪz
4	70	ip	ɛp
1	71	lɪ	θʊ
1	72	nɪ	hʌ
2	73	ʒe	mɪ
2	74	ɝʃ	ɪð
2	75	ɛθ	ɪb
2	76	ʊt	ɪŋ
4	77	gi	ne
1	78	ɪr	ɛr
4	79	rɛ	jʊ
1	80	ɪd	ɜf
2	81	ʌg	ɪz
3	82	fɪ	lɪ
4	83	tʃɝ	dɛ
1	84	ʃɪ	je
2	85	ig	ɪp
2	86	ɑr	ɪr
1	87	wɪ	li
3	88	ɪr	ɪr
4	89	mɛ	ni
3	90	sɪ	ʃɪ

[ɪ] I - 3

Training Tape Leader

1	1	Push button 1
4	2	Push button 4
2	3	Push button 2
3	4	Push 3
1	5	Push 1

Listen for [ɪ]. You will hear two words. [ɪ] is in the fi[illegible] word. You will press button 1 after you hear [ɪ].

1	6	ɪ	ɑ	Push button 1
1	7	ɪz	ɑg	Push 1
1	8	hɪz	nɑg	1
1	9	hɪt	nɑb	1
1	10	lɪp	ʃɑp	1
2	11			Push button 2

Listen for [ɪ]. You will hear two words. [ɪ] is in the second word. You will press button 2 after you hear [ɪ].

2	12	ɑ	ɪ	Push button 2
2	13	ɑg	ɪz	Push 2
2	14	nɑg	hɪz	2
2	15	nɑb	hɪt	2
2	16	ʃɑp	lɪp	2
1	17			Push button 1

Listen for [ɪ]. You will hear two words. When [ɪ] is in the second word, you will press button 2. When [ɪ] is in the first word, you will press button 1.

1	18	ɪz	ɑg	Push 1
1	19	hɪz	nɑg	1
2	20	nɑb	hɪt	Push 2
2	21	ʃɑp	lɪt	2
2	22	aʊs	ɪv	2
1	23	fɪ	su	1
1	24	fɪl	sub	1
2	25	ɑr	ɪt	2
2	26	ɑrz	ɪts	2
1	27	ɪp	ɑp	1

Program

1	1	ɪ	ɑ
1	2	ɪz	ɑg
1	3	hɪz	nɑg
2	4	nodʒ	hɪz
2	5	mɔf	hwɪz
1	6	sɪ	bɔ
2	7	bɔv	sɪt
1	8	ɪŋ	up
2	9	upt	ɪŋk
1	10	sɪŋk	fupt
1	11	ɪg	juf
2	12	mjuf	bɪg
2	13	aʊs	ɪv
2	14	tʃaʊs	lɪv

1	15	ɪd	ɑʒ	
1	16	dɪd	tɑʒ	
1	17	fɪ	su	
1	18	fɪl	sub	
2	19	tɔ	wɪ	
2	20	tɔp	wɪθ	
3	1			Push button 3
3	2			Push 3
3	3			3
3	4	ɪd	ɪd	Push 3
3	5	ɪf	ɪf	3
3	6	mɪ	mɪ	Push 3
3	7	wɪ	wɪ	3
3	8	wɪʃ	wɪʃ	3
3	9	dɪʃ	dɪd	3
1	10	fɪt	fɔz	1
2	11	taʊk	tɪl	2
3	12	bɪl	bɪl	3
3	13	pɪl	pɪg	3
2	14	bjum	bɪg	2
1	15	wɪʃ	pɔʃ	1
3	16	sɪk	sɪl	3
3	17	mɪs	lɪst	3
3	21	bɪl	bɪl	
3	22	bɪl	bɪlt	
2	23	woθ	gɪv	
1	24	hɪm	dʒaɪk	
2	25	ðɔɪm	wɪʃ	
3	26	ɪt	ɪt	
3	27	ɪt	ɪts	
3	28	fɪt	fɪts	
1	29	wɪl	ræz	
1	30	kɪŋ	djuv	
2	31	mɝb	ðɪs	
2	32	rʌd	wɪθ	
1	33	θɪŋ	seð	
2	34	fætʃ	mɪs	
3	35	ɪr	ɪr	
3	36	dɪr	dɪr	
3	37	dɪr	hɪr	
1	38	hwɪtʃ	nɝk	
1	39	dɪd	viʃ	
3	40	bɪl	fɪl	
4	1			Push button 4
4	2			Push 4
4	3			4
4	4	og	og	Push 4
4	5	ɔv	ɔv	4
4	6	bu	bu	Push 4
4	7	taʊ	taʊ	4
4	8	taʊn	taʊn	4
4	9	nof	nod	4
1	10	dɪd	duk	1

3	11	wɪʃ	dɪʃ	3
2	12	fɔl	pɪl	2
4	13	kɔm	kɔt	4
4	14	saɪk	sɔt	4
3	15	pɪk	fɪl	3
1	16	lɪv	kɑv	1
2	17	moz	bɪg	2
4	18	zok	zug	4
4	19	tɔz	bɔz	4
4	41	no	no	
4	42	tɔz	tɔz	
2	43	zug	bɪlt	
4	44	mɑs	mɑʃ	
3	45	bɪg	bɪt	
3	46	kɪs	mɪs	
1	47	skɪn	blʊtʃ	
3	48	hɪl	kɪl	
4	49	kɑð	guð	
4	50	jod	waʊp	
1	51	fɪʃ	poŋ	
3	52	bɪr	nɪr	
2	53	hwæb	lɪft	
4	54	fi	fil	
4	55	bɔɪ	tru	
4	56	laɪk	daʊn	
2	57	ep	ɪr	
3	58	θɪŋ	bɪld	
4	59	kɔl	faɪv	
1	60	wɪn	θʌt	
2	61	pɝ	sɪk	
1	62	pɪk	vɔɪs	
1	63	kwɪk	bɛst	
1	64	fɪr	ðʌdʒ	
2	65	jæp	rɪtʃ	
3	66	sɪŋ	wɪŋ	
3	67	sɪk	sɪks	
3	68	nɪr	jɪr	
2	69	θez	θɪn	
4	70	nid	pæs	
1	71	klɪr	smaɪl	
1	72	hɪd	mʌtʃ	
2	73	kip	lɪp	
2	74	ʃɝd	sɪt	
2	75	hɛft	hɪm	
2	76	nez	trɪp	
4	77	wɔk	jʌŋ	
1	78	let	lɪd	
4	79	fɑr	fɔr	
1	80	lɪk	nɛk	
2	81	flɝθ	kwɪt	
3	82	brɪdʒ	brɪŋ	
4	83	kʊd	lʌv	
1	84	lɪft	pʊr	
2	85	bɜm	mɪlk	

1	86	jɪr	jɑrd	
1	87	rɪŋ	lɛft	
3	88	hɪr	nɪr	
4	89	med	tʌb	
3	90	ʃɪp	wɪʃ	

[ɪ] I - 4

Training Tape Leader

1	1			Push button 1
4	2			Push button 4
2	3			Push button 2
3	4			Push 3
1	5			Push 1

Listen for [ɪ]. You will hear two words. [ɪ] is in the first word. You will press button 1 after you hear [ɪ].

1	6	fɪt	go	Push button 1
1	7	ɪn	ɔf	Push 1
1	8	wɪn	sɔft	1
1	9	fɪl	hɔrs	1
1	10	ðɪs	lɔŋ	1
2	11			Push button 2

Listen for [ɪ]. You will hear two words. [ɪ] is in the second word. You will press button 2 after you hear [ɪ].

2	12	go	fɪt	Push button 2
2	13	ɔf	ɪn	Push 2
2	14	sɔft	wɪn	2
2	15	hɔrs	fɪl	2
2	16	lɔŋ	ðɪs	2
1	17			Push button 1

Listen for [ɪ]. You will hear two words. When [ɪ] is in the second word, you will press button 2. When [ɪ] is in the first word, you will press button 1.

1	18	fɪt	go	Push 1
1	19	ɪn	ɔf	1
2	20	sɔft	wɪn	Push 2
2	21	lɔŋ	ðɪs	2
1	22	rɪŋ	wɔk	1
2	23	stol	kɪl	2
2	24	pre	lɪv	2
1	25	lɪvɚ	spred	1
1	26	ɪr	ɑr	1
2	27	fɑr	nɪr	2
1	28	fɪt	go	1

Program

1	1	fɪt	go	
1	2	ɪn	ɔf	
1	3	wɪn	sɔft	
2	4	hɔrs	fɪl	
2	5	lɔŋ	ðɪs	
1	6	pɪg	stɑp	
2	7	nɑt	rɪŋ	
1	8	sprɪŋ	praɪs	
2	9	gɔn	wɪl	
1	10	brɪŋ	wɑʃ	
1	11	brɪdʒ	huz	
2	12	haɪ	bɪg	
2	13	haɪɚ	bɪgɚ	
2	14	fil	dɪd	
1	15	bɪl	læft	
1	16	mɪs	hɝ	
1	17	tɪl	kes	
1	18	gɪv	noz	
2	19	bæk	lɪv	
2	20	pɑrt	wɪʃ	
3	1			Push button 3
3	2			Push 3
3	3			3
3	4	ɪp	ɪp	Push 3
3	5	ɪg	ɪg	3
3	6	sɪ	sɪ	Push 3
3	7	bɪ	bɪ	3
3	8	bɪl	bɪl	3
3	9	hɪl	bɪl	3
1	10	sɪt	sɑp	1
2	11	fɔg	bɪg	2
3	12	dɪd	dɪd	3
3	13	dɪʃ	wɪʃ	3
2	14	pok	pɪk	2
1	15	lɪv	laʊd	1
3	16	wɪn	tɪn	3
3	17	wɪŋ	fɪt	3
3	21	pɪt	pɪt	
3	22	fɪl	fɪt	
2	23	hæpən	rɪvɚ	
1	24	ɪts	edʒ	
2	25	ðæt	kɪŋ	
3	26	rɪtʃ	wɪtʃ	
3	27	pɪk	sɪk	
3	28	kɪst	mɪst	
1	29	ʃɪp	haʊs	
1	30	ɪf	æm	
2	31	slæm	lɪft	
2	32	lʌntʃ	ɪntʃ	
1	33	kɪl	stil	
2	34	lɑrdʒɚ	dɪnɚ	
3	35	sɪt	sɪti	

3	36	lɪv	lɪvɚ	
3	37	mɪs	mɪstɚ	
1	38	pɪŋk	hɛlθ	
1	39	wɪnd	kɛpt	
3	40	jɪr	nɪr	
4	1			Push button 4
4	2			Push 4
4	3			4
4	4	ob	ob	Push 4
4	5	aʊf	aʊf	4
4	6	lu	lu	Push 4
4	7	maɪ	maɪ	4
4	8	maɪn	maɪn	4
4	9	maɪn	men	4
1	10	lɪp	lɑp	1
3	11	stɪk	stɪl	3
2	12	huz	hɪz	2
4	13	pæk	pæk	4
4	14	tæk	tek	4
3	15	spɪl	fɪl	3
1	16	bɪt	bɔr	1
2	17	wɑʃ	fɪʃ	2
4	18	noz	rod	4
4	19	sup	nɑt	4
4	41	no	not	
4	42	nʌn	tebəl	
2	43	bʌs	lɪp	
4	44	mil	tʃɛndʒ	
3	45	fɪʃ	wɪʃ	
3	46	ɪr	dɪr	
1	47	hɪr	fɔr	
3	48	stɪl	stɪk	
4	49	bəkɔz	pɚhæps	
4	50	ʒɛr	ðɛn	
1	51	θɪŋk	ʌðɚ	
3	52	sɪŋ	wɪŋ	
2	53	stɛp	jɪr	
4	54	hɑrt	laɪt	
4	55	ɔlmost	səpoz	
4	56	dɑktɚ	θaʊzənd	
2	57	mʌnθ	drɪŋk	
3	58	hɪz	hɪm	
4	59	ʃop	ʃep	
1	60	bɪt	juz	
2	61	gev	kɪs	
1	62	ɪtʃ	ɛvɚ	
1	63	ɪl	old	
1	64	mɪlk	fæmˈli	
2	65	dʒʌst	hwɪtʃ	
3	66	prɪnt	prɪns	
3	67	rɪvɚ	sɪlvɚ	
3	68	hɪl	hɪli	
2	69	wʊmən	gɪvən	
4	70	dɑlɚ	kwɔrtɚ	
1	71	ɪl	iðɚ	
1	72	tɪrz	gɔn	
2	73	hɑrd	fɪt	
2	74	lɜn	wɪθ	
2	75	ʃʊd	kwɪk	
2	76	frɛʃ	fɪʃ	
4	77	mek	stænd	
1	78	skɪn	wɜk	
4	79	wʊd	hɛd	
1	80	ɪŋk	ebəl	
2	81	rʌg	trɪp	
3	82	lɪtəl	lɪsən	
4	83	fʊl	hɜz	
1	84	əntɪl	əskep	
2	85	ɛnəmiz	kɪtʃən	
1	86	sɪks	tʃɔɪs	
1	87	pɪlo	jɛlo	
2	88	sʌnde	dɪnɚ	
1	89	vɪzət	hjumən	
3	90	sɪstɚ	sɪstəm	

[ɪ] I - 5

Training Tape Leader

1	1		Push button 1
4	2		Push button 4
2	3		Push button 2
3	4		Push 3
1	5		Push 1

Listen for [ɪ]. You will hear one word. [ɪ] is at the beginning of the word. You will press button 1 after you hear [ɪ].

1	6	ɪt	Push button 1
1	7	ɪb	Push 1
1	8	ɪd	1
1	9	ɪr	1
1	10	ɪs	1
1	11	ɪz	1
3	12		Push button 3

Listen for [ɪ]. You will hear one word. [ɪ] is at the end of the word. You will press button 3 after you hear [ɪ].

3	13	fɪ	Push button 3
3	14	nɪ	Push 3
3	15	gɪ	3
3	16	hɪ	3
3	17	bɪ	3
3	18	mɪ	3

2	19		Push button 2

Listen for [ɪ]. You will hear one word. [ɪ] is in the middle of the word. You will press button 2 after you hear [ɪ].

2	20	fɪt	Push button 2
2	21	hɪd	Push 2
2	22	hɪr	2
2	23	ðɪs	2
2	24	wɪnd	2
2	25	kwɪk	2
1	26		Push button 1

You will hear one word. Listen for [ɪ]. When [ɪ] is at the end, you will press button 3. When [ɪ] is in the middle, you will press button 2. When [ɪ] is at the beginning, you will press button 1.

1	27	ɪt	Push 1
2	28	fɪt	Push 2
3	29	fɪ	Push 3
3	30	gɪ	3
1	31	ɪb	1
2	32	rɪb	2
1	33	ɪr	1
3	34	mɪ	3
2	35	mɪs	2
2	36	kɪt	2
3	37	nɪ	3
1	38	ɪt	1

Program

1	1	ɪt	
3	2	fɪ	
2	3	fɪt	
3	4	nɪ	
1	5	ɪb	
3	6	gɪ	
1	7	ɪd	
3	8	hɪ	
2	9	hɪd	
2	10	hɪz	
1	11	ɪts	
2	12	ðɪs	
2	13	lɪθ	
1	14	ɪð	
2	15	mɪp	
1	16	ɪf	
2	17	wɪl	
1	18	ɪr	
1	19	ɪs	
3	20	fɪ	
2	21	hɪr	
2	22	bɪg	
1	23	ɪn	
2	24	dɪd	
1	25	ɪz	
2	26	pɪk	
2	27	sɪk	
2	28	wɪn	
2	29	sɪt	
2	30	mɪlk	
4	1		Push button 4
4	2		Push 4
4	3		4
4	4	aɪm	4
4	5	nɑt	4
4	6	dʒɔ	
4	31	no	
4	32	un	
4	33	pɑg	
3	34	bɪ	
1	35	ɪʒ	
2	36	kɪs	
4	37	aʊt	
4	38	nu	
4	39	kɔst	
2	40	nɪr	
1	41	ɪtʃ	
2	42	θɪn	
2	43	wɪŋ	
4	44	baɪ	
2	45	wɪnd	
4	46	ɔf	
1	47	ɪntʃ	
2	48	fɪʃ	
2	49	stɪl	
2	50	dɪr	
2	51	bɪlt	
1	52	ɪl	
1	53	ɪtʃəz	
4	54	ʌs	
2	55	fɪr	
2	56	kɪl	
2	57	rɪtʃ	
4	58	bæk	
2	59	kwɪt	
1	60	ɪntu	
2	61	bɪr	
4	62	edʒ	
2	63	sɪŋ	
2	64	kwɪk	
1	65	ɪtʃi	
2	66	hɜd	

1	67	ɪŋk
2	68	mɪs
4	69	ʃɔrt
2	70	kɪŋ
1	71	ɪŋk
4	72	vɔɪs
2	73	wɪʃ
4	74	bɛl
2	75	klɪr
4	76	θru
2	77	wɪndo
4	78	gret
2	79	mɪstɚ
2	80	sɪstəm
2	81	sɪti
1	82	ɪnˈdʒɔɪ
4	83	hɛvən
2	84	kɪtʃən
2	85	mɪdəl
4	86	pɝsən
2	87	wɪntɚ
4	88	æpəl
1	89	ˈɪŋglənd
4	90	ənʌðɚ

[ɪ] I - 6

Training Tape Leader

1	1			Push button 1
4	2			Push button 4
2	3			Push button 2
3	4			Push 3
1	5			Push 1

Listen for [ɪ]. When the first word has [ɪ], you will press button 1. When the second word has [ɪ], you will press button 2.

1	6	bɪg	bæg	Push button 1
2	7	laɪv	lɪv	Push 2
2	8	hoz	hɪz	Push 2
1	9	ɪr	ɔr	1
2	10	æts	ɪts	2
1	11	nɪr	nɔr	1
3	12			Push button 3

Listen for [ɪ]. When both words have [ɪ], you will press button 3. When neither word has [ɪ], you will press button 4.

3	13	bɪg	bɪg	Push button 3
3	14	lɪv	lɪv	Push 3
4	15	no	nʌn	Push 4
4	16	hwaɪ	nɑt	4
3	17	ɪr	ɪr	3
3	18	ɪts	ɪts	3
1	19			Push button 1

Listen for [ɪ]. You will hear two words. When [ɪ] is in the first word, you will press button 1. When [ɪ] is in the second word, you will press button 2. When [ɪ] is in both words, you will press button 3. When [ɪ] is in neither word, you will press button 4.

1	20	bɪg	bæg	Push button 1
2	21	laɪv	lɪv	Push 2
3	22	hɪz	hɪz	3
4	23	no	nʌn	4
3	24	ɪr	ɪr	3
4	25	hwaɪ	nɑt	4
2	26	nɔr	nɪr	2
1	27	ɪts	ætʃ	1
1	28	drɪŋk	dræŋk	1
2	29	ɔr	ɪr	2
4	30	ɔl	ɔl	4
3	31	kɪst	kɪst	3
1	32	bɪg	bæg	1

Program

1	1	bɪg	bæg
2	2	laɪv	lɪv
3	3	wɪl	wɪl
4	4	ɔl	ɔl
1	5	ɪz	iz
3	6	ɪz	ɪz
4	7	edʒ	edʒ
2	8	dud	dɪd
1	9	wɪθ	wæθ
1	10	mɪs	mis
2	11	kɔŋ	kɪŋ
1	12	tɪl	tʊl
2	13	kust	kɪst
2	14	aɪf	ɪf
2	15	gʌv	gɪv
1	16	ðɪs	ðʌs
1	17	ɪr	ɔr
2	18	bruŋ	brɪŋ
1	19	hɪz	hoz
2	20	hɛr	hɪr
2	21	lip	lɪp
2	22	θɑn	θɪn
3	23	fɪl	fɪl

3	24	fɪʃ	fɪʃ
2	25	æts	ɪts
2	26	stɔk	stɪk
2	27	pɛk	pɪk
1	28	ðɪs	ðɜs
4	29	θri	θri
1	30	hɪm	hæm
1	31	wɪʃ	wɑʃ
2	32	stɔl	stɪl
2	33	wɛl	wɪl
4	34	ɑrm	ɑrm
2	35	dræŋk	drɪŋk
3	36	ɪn	ɪn
2	37	bʌg	bɪg
2	38	dɛd	dɪd
1	39	bɪt	bʌt
3	40	bɪzi	bɪzi
2	41	monət	mɪnət
1	42	gɪv	gev
1	43	sɪlvɚ	sɛlvɚ
1	44	dɪr	dɔr
1	45	ɪt	et
1	46	mɪstɚ	mæstɚ
1	47	ɪtʃ	aʊtʃ
3	48	pɪktʃɚ	pɪktʃɚ
1	49	bɪl	bɛl
2	50	fɛl	fɪl
2	51	bʌtɚ	bɪtɚ
2	52	sʊti	sɪti
1	53	hɪd	hæd
1	54	slɪd	slʌd
4	55	fit	fʊt
2	56	ræŋ	rɪŋ
2	57	spræŋ	sprɪŋ
3	58	tʃɪr	tʃɪr
1	59	brɪdʒ	brʊdʒ
2	60	θɔŋ	θɪŋ
1	61	θɪŋk	θæŋk
1	62	pɪk	pɜk
1	63	ɪntu	ɔntu
4	64	hom	hæm
1	65	hɪr	hɝ
4	66	ɛr	ɔr
2	67	hil	hɪl
3	68	kɪs	kɪst
2	69	ɔɪl	ɪl
3	70	sɪstɚ	mɪstɚ
1	71	sɪk	sek
1	72	wɪmən	wʌmən
3	73	nɪr	hɪr
1	74	prɪns	præns
2	75	tʊr	tɪr
1	76	rɪd	rɛd
2	77	lɛd	lɪd
3	78	klɪr	bɪr
1	79	sɪt	sɛt
4	80	fɑr	fɔr
4	81	sæt	sit
1	82	bə'gɪn	bə'gʌn
2	83	tʃældrən	tʃɪldrən
3	84	hwɪtʃ	wɪtʃ
1	85	bɪld	bɔld
3	86	fɪt	fɪts
4	87	mæs	mɛs
2	88	lɛtəl	lɪtəl
3	89	kwɪt	kwɪk
1	90	ɪntʃ	entʃ

[ɪ] II - 1

1	ɔ
2	u
3	aɪ
4	ɪ
5	ɑ
6	ɪ
7	u
8	ɪ
9	ɪ
10	aʊ
11	aɪ
12	ɔɪ
13	ɪ
14	ɪ
15	ju
16	ɪ
17	ʊ
18	ɪ
19	ɔ
20	ɪ
21	ɑ
22	ɪ
23	o
24	æ
25	e
26	ɪ
27	ʌ
28	ɪ
29	ɪ
30	ɛ
31	ɪ
32	ɝ
33	ʊ
34	ɪ
35	æ
36	ɪ
37	o
38	ɪ

39	ɪ
40	ʌ
41	ɪ
42	ɪ
43	ɛ
44	ɪ
45	ɪ
46	i
47	ɪ
48	ɪ
49	ɪ
50	ɪ

[ɪ] II - 2

1	ɑm
2	ɔd
3	uz
4	ɪz
5	aɪs
6	ɪt
7	od
8	ɪk
9	ɪg
10	æd
11	ɪt
12	ɪts
13	ɔn
14	ɪn
15	ɪntʃ
16	mɑm
17	nun
18	baɪt
19	bɪt
20	dæd
21	dɪd
22	mel
23	mɪl
24	mɪlk
25	kæt
26	kɪt
27	kɪtən
28	kaʊ
29	bɪg
30	lɪt
31	lɪtəl
32	æz
33	ɪz
34	nat
35	ɪzənt
36	lo
37	go
38	tu
39	tɪ
40	kæ
41	bɪ
42	ɔn
43	ɪn
44	ɪntu
45	wʌn
46	wɪn
47	ɔf
48	ɪf
49	laɪv
50	lɪv
51	ɪl
52	ɑl
53	wɪl
54	wɪn
55	min
56	ɪn
57	ɪndiən
58	pæn
59	pɪn
60	pɪŋk
61	θɪŋk
62	θɪŋkɪŋ
63	θɔt
64	ɔt
65	ɪt
66	ɪts
67	ɪtsɛlf
68	sɛl
69	sɪl
70	sɪli
71	sɪlvɚ
72	rɛd
73	brɛd
74	ɪs
75	ðɪs
76	sɪt
77	ɪt
78	ɪtʃ
79	hwɪtʃ
80	ɪts dʌn

[ɪ] II - 3

1	ɑm
2	ɔf
3	ɪf
4	ɪz
5	aʊt
6	ɪt
7	uz
8	ɪz
9	ɪtʃ
10	to

11 sɪ
12 sɪt
13 ho
14 hɪ
15 hɪm
16 baɪ
17 bɪ
18 bɪn
19 ho
20 hɪ
21 hɪz
22 du
23 dɪ
24 dɪd
25 θɑɪ
26 θɪ
27 θɪŋ
28 sut
29 sæt
30 sɪt
31 aʊr
32 ɪr
33 ɪrz
34 hɪrz
35 ɑl
36 ɪl
37 tɪl
38 stɪl
39 kæn
40 kænt
41 æt
42 hæt
43 ɪt
44 ɪts
45 ɪtsɛlf
46 ɪz
47 hɪz
48 hɪm
49 ɪŋk
50 θɪŋk
51 θɪŋks
52 drɪŋk
53 ɪt
54 kɪt
55 kɪtən
56 ɪn
57 ɪntʃ
58 ɪntu
59 ɪnsaɪd
60 ɪndɔrz
61 ɪl
62 wɪl
63 wɪθ
64 wɪθaʊt
65 wɪʃ
66 ɪz
67 ɪzənt
68 lɪt
69 lɪtəl
70 mɪl
71 mɪlk
72 ɪr
73 dɪr
74 nɪr
75 ɪk
76 tʃɪk
77 tʃɪkən
78 ɪn
79 ɪndiə
80 ɪndiən

[ɪ] II - 4

1 ɪg
2 ɪd
3 ɪt
4 ɪts
5 mɪ
6 nɪ
7 lɪ
8 bɪ
9 bɪd
10 bɪt
11 bɪtɚ
12 bɪl
13 ɪn
14 ɪndʒ
15 ɪndʒən
16 hɪndʒ
17 hɪnt
18 hɪt
19 tɪ
20 dɪ
21 sɪ
22 sɪt
23 ɪt
24 ɪk
25 ɪks
26 mɪks
27 mɪksɚ
28 fɪ
29 fɪr
30 tʃɪr
31 ɪri
32 hɪr
33 hiz hɪr
34 ɪz
35 hɪz

36 ðæts hɪz
37 ðæts hɪz bʊk
38 ɪl
39 wɪl
40 wɪlɪŋ
41 wɪlɪŋ tu
42 dɪ
43 dɪd
44 dɪd nɑt
45 ɪg
46 pɪg
47 ə pɪg
48 pɪk
49 pɪkt
50 pɪkt hɝ
51 hɪm
52 tə hɪm
53 go tə hɪm
54 ɪti
55 prɪti
56 prɪti naɪs
57 ɪr
58 nɪr
59 nɪr ʌs
60 wɪn
61 wɪndo
62 ðə wɪndo
63 ðə wɪndo pen
64 bɪg
65 bɪg bɔɪ
66 ə bɪg bɔɪ
67 lɪt
68 lɪtəl
69 ə lɪtəl
70 ə lɪtəl bɪt
71 sɪt
72 sɪt daʊn
73 sɪt daʊn naʊ
74 rɪŋ
75 drɪŋk
76 ə drɪŋk
77 θɪŋ
78 θɪŋk
79 aɪ θɪŋk
80 aɪ θɪŋk so

[ɪ] II - 5

1 ɪt
2 ɪts
3 ɪts oke
4 ɪs
5 lɪs
6 lɪsən
7 lɪsənd
8 mɪs
9 mɪsɪŋ
10 mɪstɚ
11 ɪt
12 sɪt
13 sɪt daʊn
14 ɪs
15 ðɪs
16 ðɪs wʌn
17 dɪd
18 dɪdənt
19 aɪ dɪdənt
20 hɪm
21 tə hɪm
22 go tə hɪm
23 gɪv
24 gɪv hɝ
25 gɪv hɝ sʌm
26 lɪtəl
27 ðə lɪtəl
28 ðə lɪtəl bɔɪ
29 hɪr
30 ɑr hɪr
31 ðe ɑr hɪr
32 bɪg
33 bɪg bɔɪ
34 ə bɪg bɔɪ
35 hɪt
36 hɪt ðə
37 hɪt ðə bɔl
38 rɪŋ
39 ə rɪŋ
40 ə naɪs rɪŋ
41 θɪŋk
42 θɪŋk əv
43 θɪŋk əv ɪt
44 ju θɪŋk əv ɪt
45 lɪv
46 aɪ lɪv
47 aɪ lɪv ɪn
48 aɪ lɪv ɪn taʊn
49 mɪs
50 mɪstɚ
51 mɪstɚ smɪθ
52 kɪd
53 ə kɪd
54 ə kɪd kem
55 ə kɪd kem hɪr
56 wɪl
57 wɪl ju
58 wɪl ju go
59 θɪn
60 θɪn mæn

61 ðə θɪn mæn
62 ðɪs
63 ðɪs mæn
64 ðɪs mæn ɪz naɪs
65 θɪŋ
66 sʌmθɪŋ
67 se sʌmθɪŋ
68 aɪ se sʌmθɪŋ
69 ɪts
70 ɪts hɪz
71 ɪts hɪz bɔl
72 sɪt
73 aɪ sɪt
74 aɪ sɪt hɪr
75 aɪ sɪt hɪr tu
76 dɪd
77 hi dɪd
78 hi dɪd ɪt
79 hi dɪd ɪt fɝst
80 hi dɪd ɪt læst

[ɪ] II - 6

1 bɪn
2 aɪv bɪn
3 aɪv bɪn ðɛr
4 ðɪs
5 ðɪs wʌn
6 ðɪs wʌn hɪr
7 lɪsən
8 aɪ lɪsən
9 aɪ lɪsən tə hɪm
10 gɪv
11 aɪl gɪv
12 aɪl gɪv ɪt
13 aɪl gɪv ɪt tə ju
14 rɪtʃ
15 rɪtʃɚ
16 ɪz rɪtʃɚ
17 hi ɪz rɪtʃɚ
18 sɪt
19 ðe sɪt
20 ðe sɪt daʊn
21 ðə sɪti
22 tə ðə sɪti
23 go tə ðə sɪti
24 go tə ðə bɪg sɪti
25 kɪtən
26 ɪts ə kɪtən
27 ɪts ə lɪtəl kɪtən
28 wɪl
29 hi wɪl
30 hi wɪl θɪŋk
31 sɪstɚ
32 hɪz sɪstɚ
33 hɪz sɪstɚ ɪz naɪs
34 dɪd
35 hi dɪd
36 ʃi dɪdənt
37 ʃi dɪdənt du ɪt
38 rɪŋ
39 maɪ rɪŋ
40 ɪts maɪ rɪŋ
41 ɪts nat hɝ rɪŋ
42 ðə hɪl
43 ʌp ðə hɪl
44 ʌp ðə bɪg hɪl
45 ðə hɪl ɪz bɪg
46 sʌm mɪlk
47 ə glæs əv mɪlk
48 drɪŋk ə glæs əv mɪlk
49 drɪŋk ə bɪg glæs
50 tʃɪkən
51 fraɪd tʃɪkən
52 ɪts fraɪd tʃɪkən
53 ɪts ə tʃɪkən dɪnɚ
54 præktɪs
55 wi præktɪs ə lat
56 wi præktɪs ðɪs we
57 ðɪs præktɪs ɪz izi
58 stɪks
59 pɪk ʌp stɪks
60 ple pɪk ʌp stɪks
61 wɪl
62 wɪl ju
63 wɪl ju gɪv mi sʌm
64 aɪ wɪl gɪv ju sʌm
65 kʌm ɪnsaɪd
66 kʌm ɪnsaɪd hɪr
67 wi dɪd kʌm hɪr
68 hɪr ɪt kʌmz
69 ɪt wəz snoɪŋ
70 ɪts nat snoɪŋ naʊ
71 ɪt ɪzənt snoɪŋ naʊ
72 dɪnɚ
73 dɪnɚ taɪm
74 ɪts dɪnɚ taɪm
75 dɪd ju it dɪnɚ
76 sɪŋ
77 sɪŋ ə sɔŋ
78 sɪŋɪŋ sɔŋz
79 wɪr sɪŋɪŋ sɔŋz
80 wɪr hævɪŋ fʌn

[ɪ] II - 7

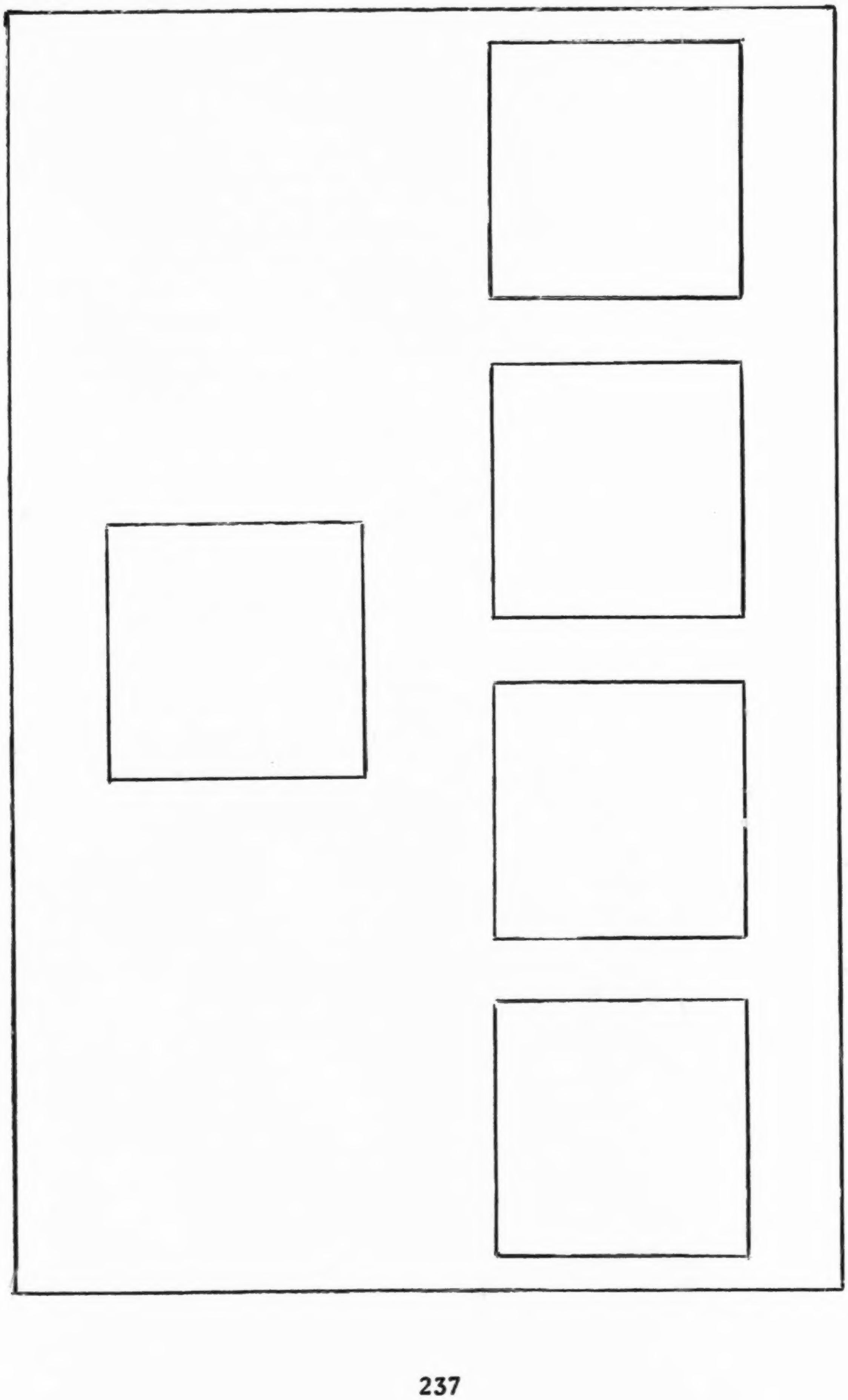
1 ɪts ðə sem
2 se ɪt ðɪs we

3 ðɪs ɪz izi tə se
4 wi sɛd ɪt ðɪs we bɪfɔr
5 præktɪs ɪt
6 hɪr nau
7 aɪ hɪr ɪt nau
8 hwɪtʃ wʌn du aɪ hɪr
9 ju hɪr ðɪs wʌn
10 aɪ stɪl hɪr ɪt
11 lɪsən
12 lɪsən tə ðɪs
13 wɪr lɪsnɪŋ tə ju
14 ɪts ə stɔri
15 ðə θri lɪtəl pɪgz
16 ðə pɪgz bɪlt hauzɪz
17 wʌn pɪg bɪlt ə strɔ haus
18 wʌn bɪlt ə stɪk haus
19 wʌn bɪlt ə brɪk haus
20 ðə bɪg bæd wulf kem
21 hi kem tə ðə bɪg brɪk haus
22 hi traɪd tə it ðə θri lɪtəl pɪgz
23 dɪd hi it ðə pɪgz
24 no hi dɪdənt
25 ðə pɪgz dɪdənt lɛt hɪm
26 ðe stɪl lɪv ɪn ðɛr brɪk haus
27 ðə bɪg bæd wulf ɪz gɔn
28 aɪ wɑnt dɪnɚ
29 aɪ wɑnt ə glæs əv mɪlk
30 pur sʌm mɪlk ɪn maɪ glæs
31 aɪ drɪŋk lɑts ə mɪlk
32 aɪ wɑnt tʃɪkən fɚ dɪnɚ
33 gɪv mi ə drʌmstɪk pliz
34 gɪv hɪm ə wɪŋ
35 dont lɪk jur fɪŋgɚz
36 gɪv mi ə bɪskɪt pliz
37 aɪ wɑnt dʒɪblət grevi ɔn ɪt
38 də ju laɪk hɑmɪni grɪts
39 no ɪts tu stɪki
40 kən aɪ sɪt wɪθ ju
41 ʃur sɪt ovɚ hɪr wɪθ mi
42 aɪv bɪn wetɪŋ fɔr ju
43 nau wi wɪl wɔʃ dɪʃəz
44 pɪk ʌp jur dɪʃəz
45 tek ðə dɪʃəz ɪn ðə kɪtʃən
46 put ðə dɪʃəz ɪn ðə sɪnk
47 put ə lɪtəl sop ɪn ðə sɪŋk
48 duɪŋ dɪʃəz ɪzənt vɛri hɑrd
49 ɪts prɪti kwɪk
50 ðɪs we ɪz kwɪk ən izi
51 nau ɪts taɪm tə kwɪt
52 kʌm si maɪ kɪtən
53 ɪzənt ɪt prɪti
54 ɪts ðə prɪtiəst kɪtən
55 hɪz fɝ ɪz gre
56 hɪz tʌŋ ɪz pɪŋk
57 ænd hɪz noz ɪz pɪŋk tu
58 hi ʃur ɪz ə kjut lɪtəl θɪŋ
59 aɪ θɪŋk hiz ðə bɛst kɪtən ɛvɚ
60 hɪr kʌmz maɪ sɪstɚ
61 ʃiz kʌmɪŋ tə si ðə kɪtən
62 ʃiz kʌmɪŋ wɪθ hɪz fud
63 hi drɪŋks mɪlk
64 gɪv ðə kɪtən sʌm mɪlk
65 put ɪt ɪn hɪz dɪʃ
66 hi put hɪz fut ɪn ðə dɪʃ
67 hɪz lɪtəl fut ɪz ɔl dɝti
68 hɪz fut hæz mɪlk ɔl ovɚ ɪt
69 hiz drɪŋkɪŋ ðə mɪlk nau
70 nau hiz fɪnɪʃt
71 maɪ sɪstɚ wɪl gɪv hɪm ə bæθ
72 ʃi wɪl klin hɪz fut
73 ɪf ju wɑnt ju kən pɛt hɪm
74 dont kɪs hɪm dʒʌst pɛt hɪm
75 pɛt hɪm ðɪs we
76 hɪz fɝ ɪz sɔft
77 ɑr wi fɪnɪʃt nau
78 no ðɪs ɪzənt ðə ɛnd
79 ðɪs ɪz ɔlmost ðə læst
80 ðɪs ɪz ðə læst θɪŋ tə se

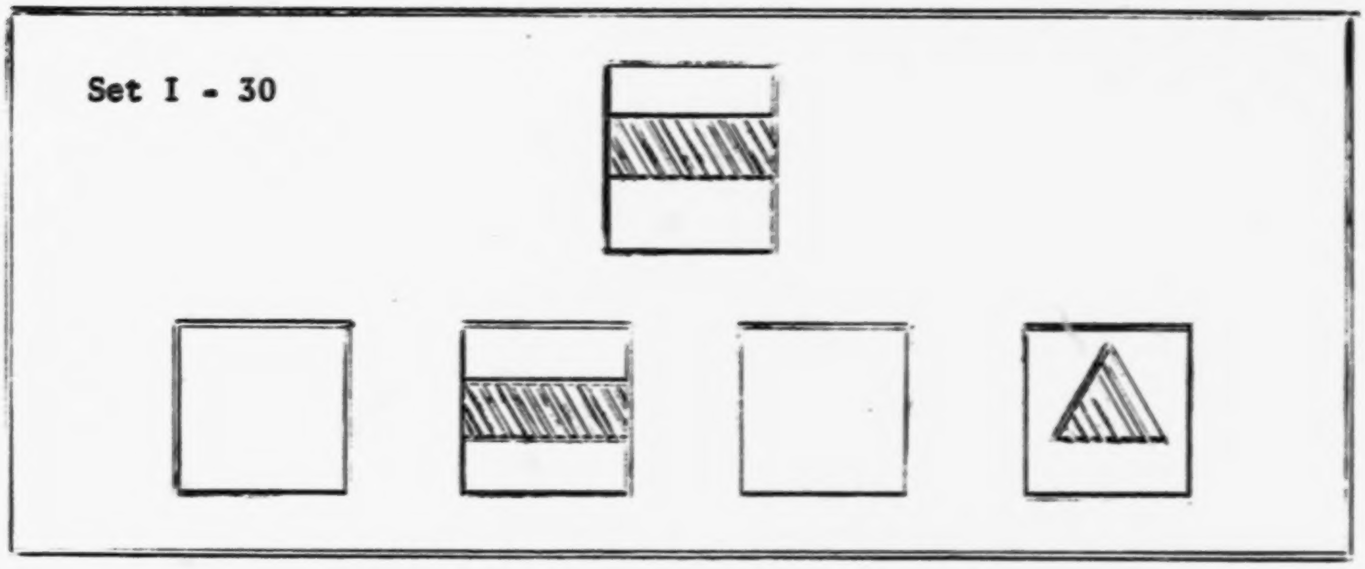
APPENDIX D

SAMPLE OF "OVER" PROGRAM

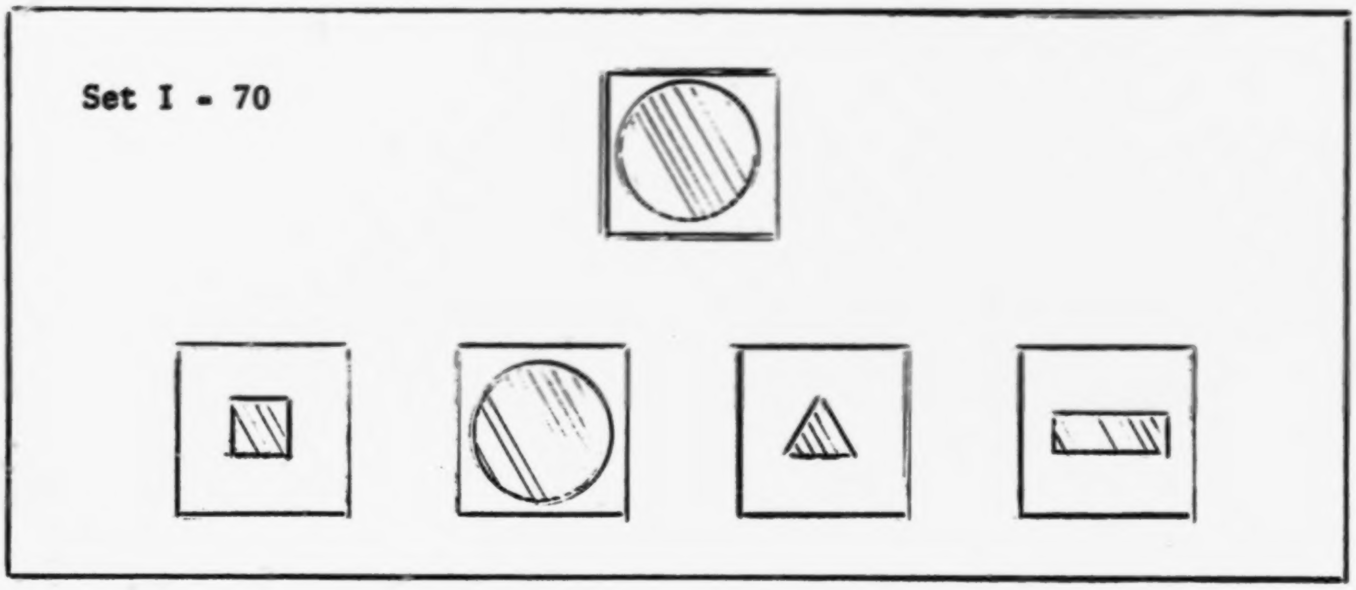
A frame from the "Over" program is drawn below to the scale 3/4:1 of the size used for the initial testing of the program at Atlanta. The following 12 frames (not drawn to scale) indicate the total program sequence.



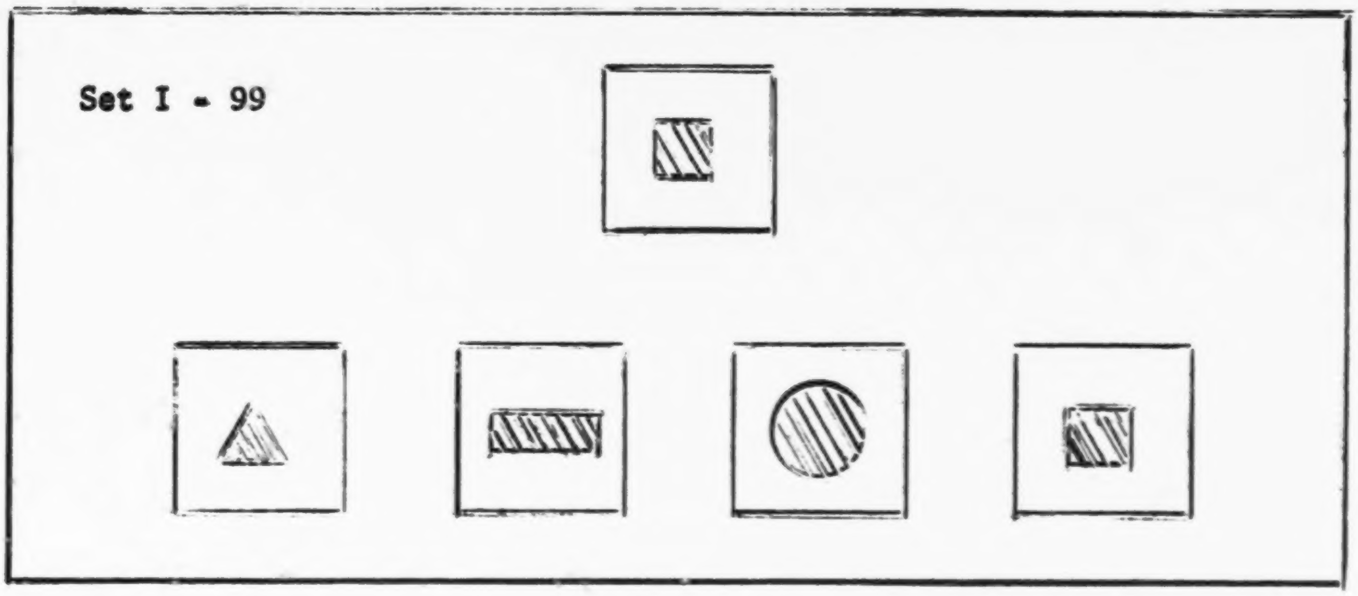
Set I - 30

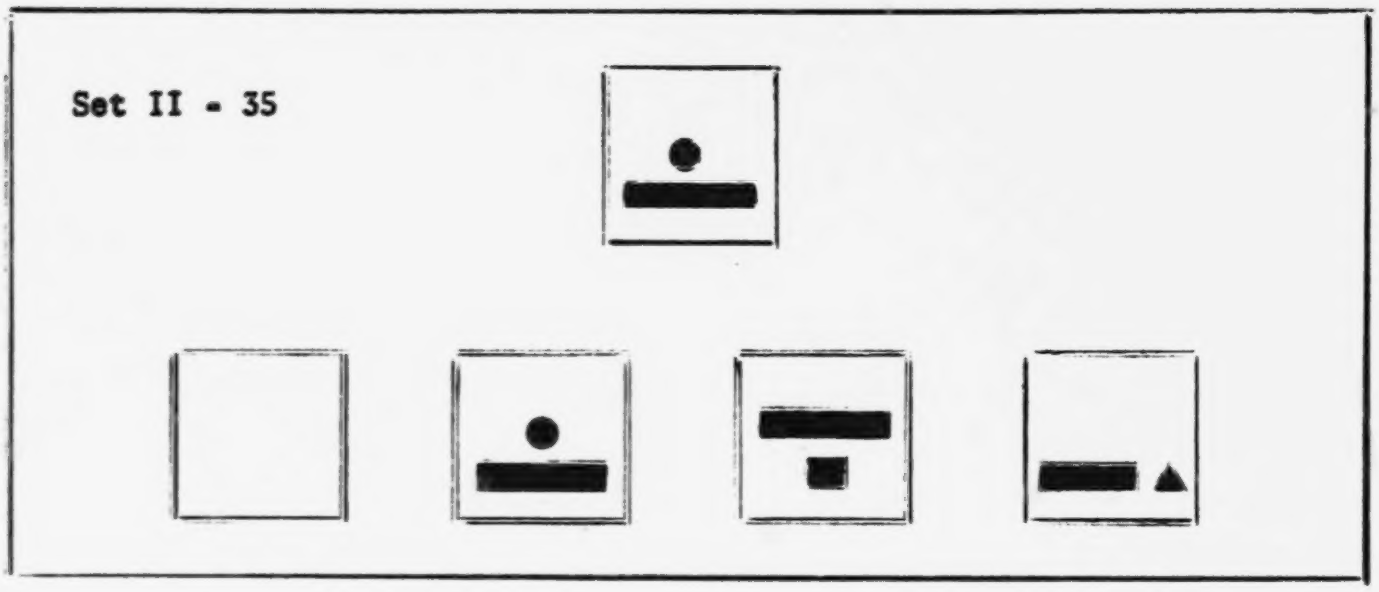


Set I - 70

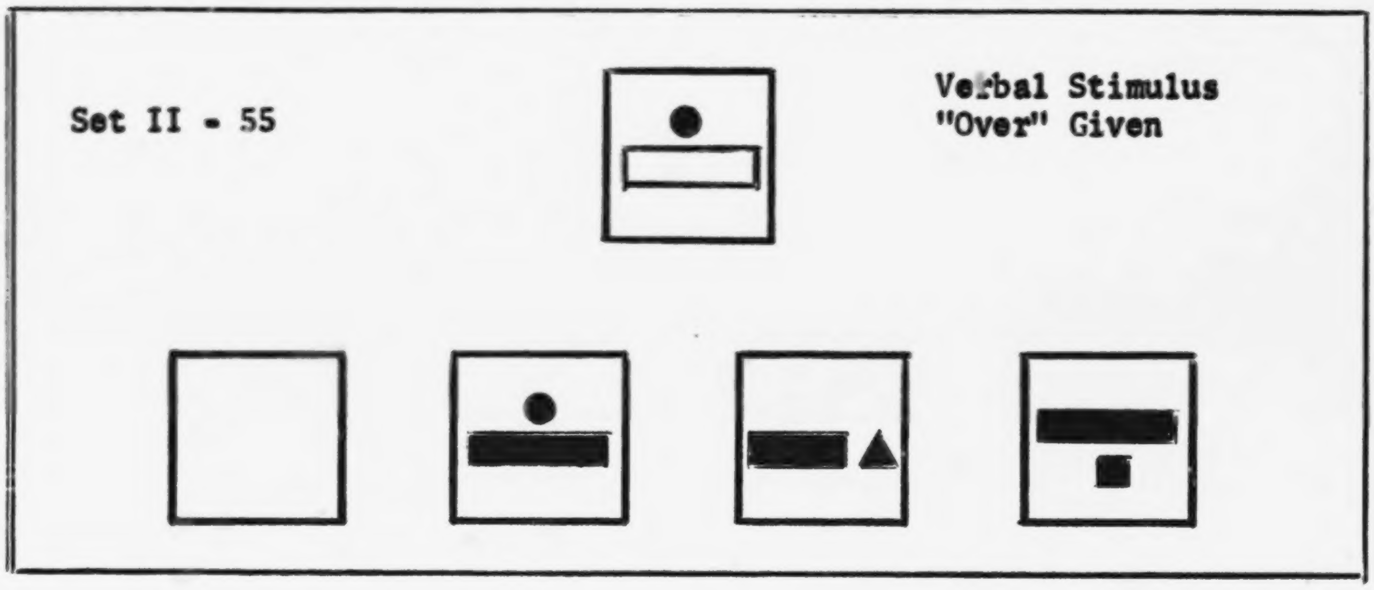


Set I - 99



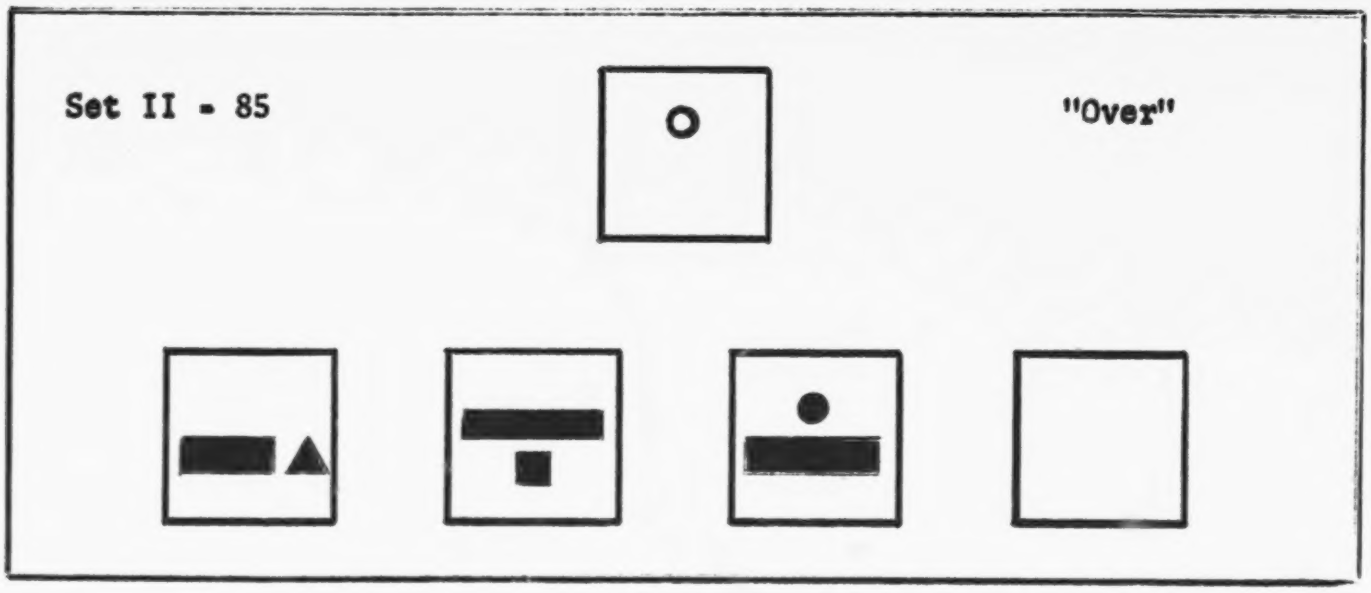


Set II - 35



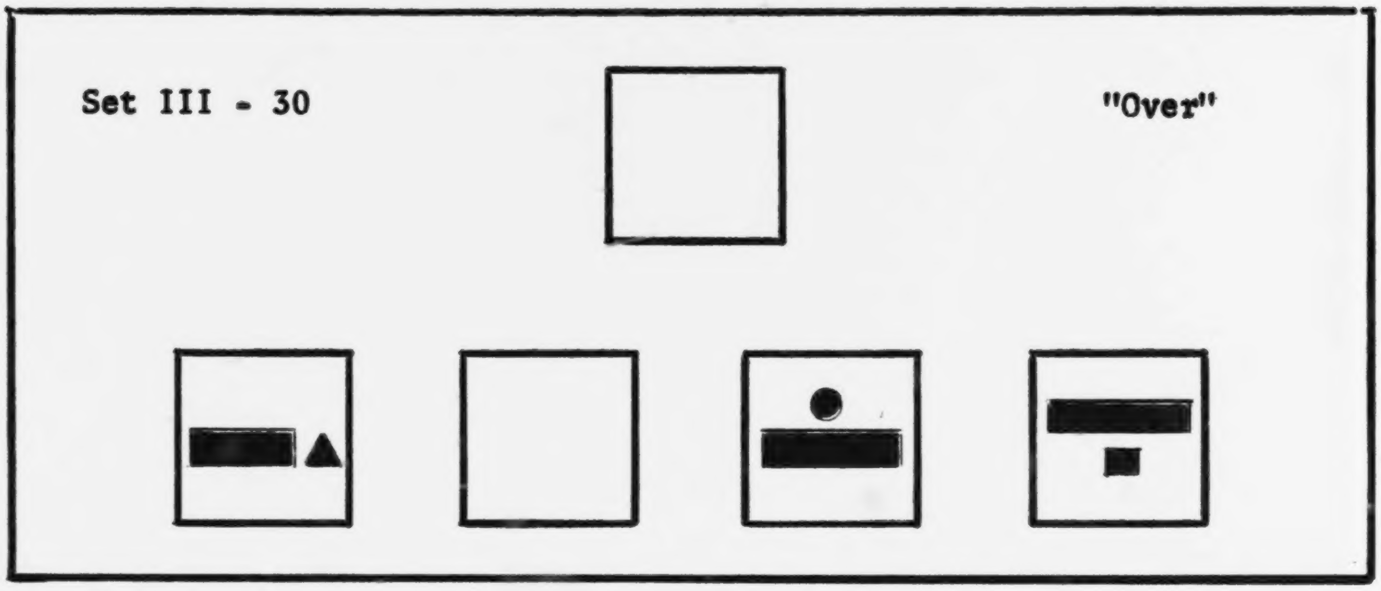
Set II - 55

Verbal Stimulus "Over" Given

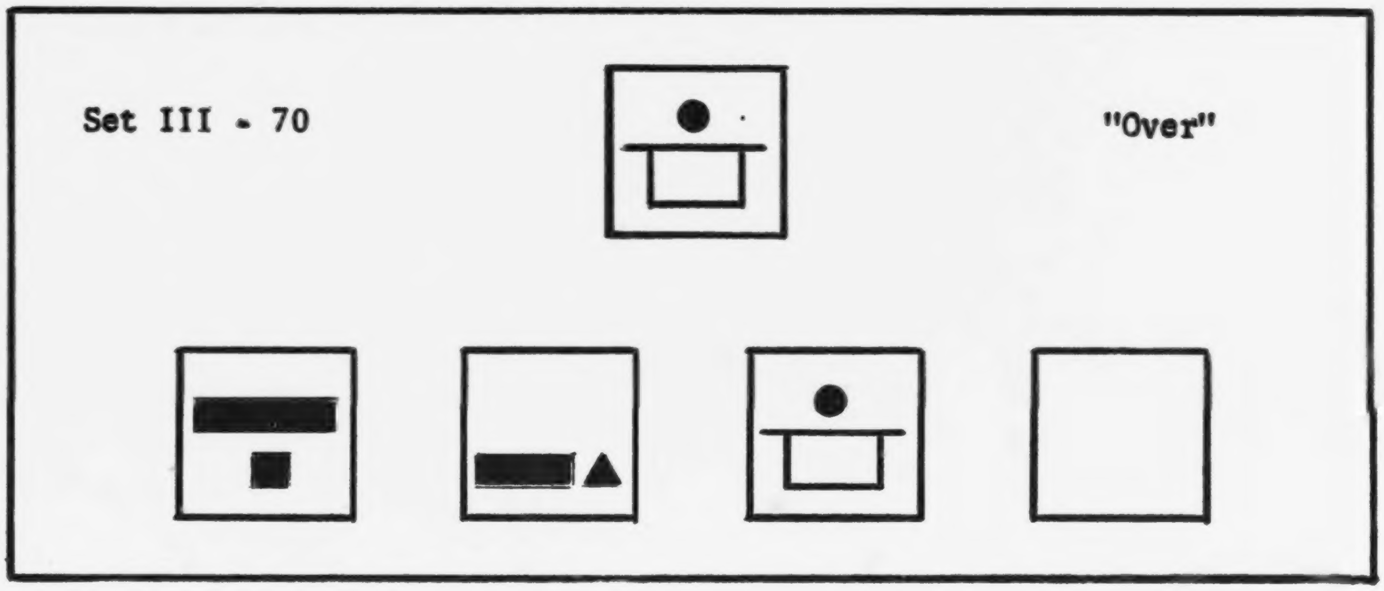


Set II - 85

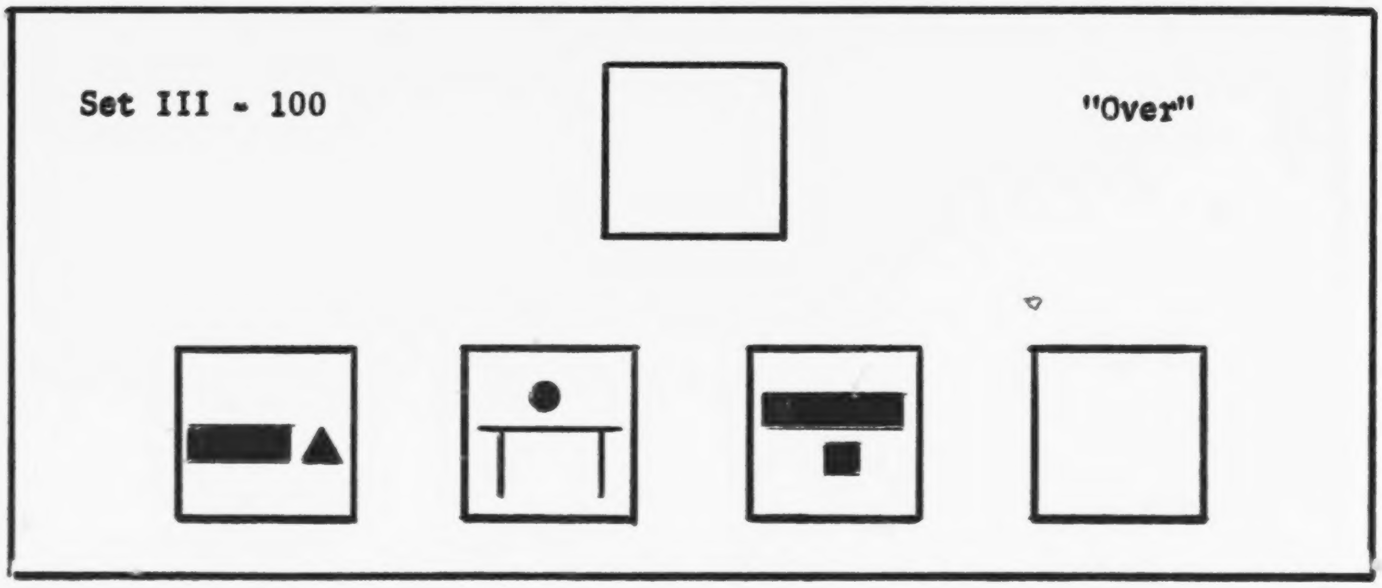
"Over"


Set III - 30

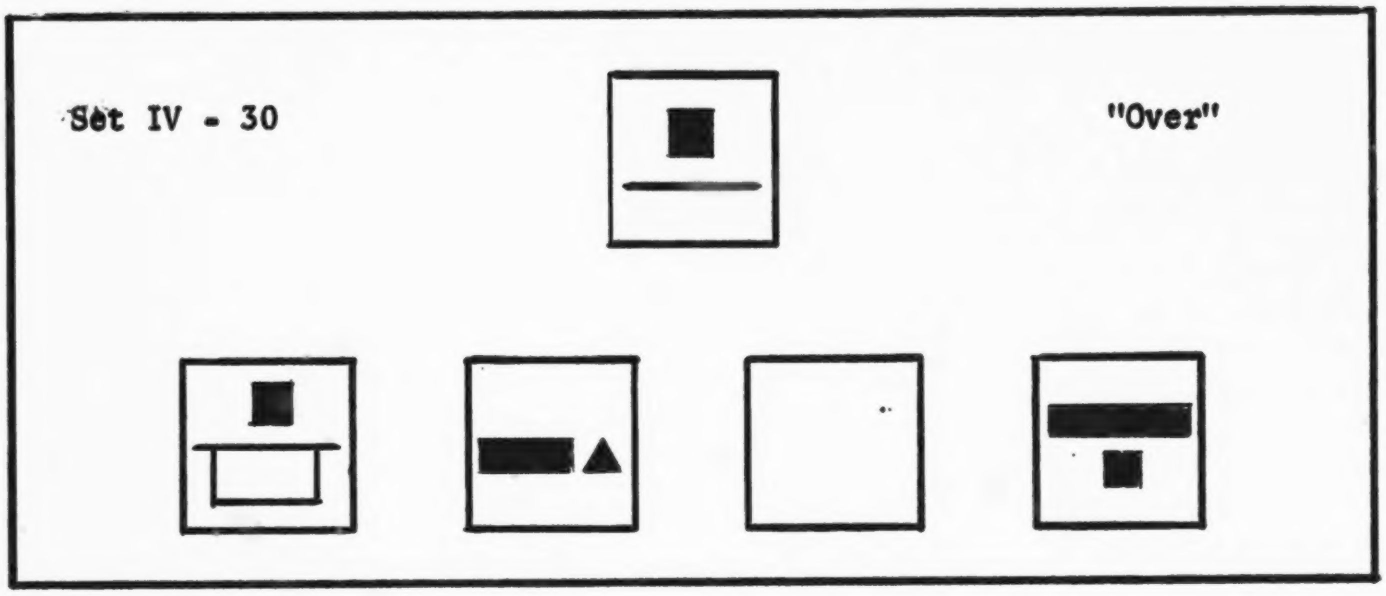
"Over"


Set III - 70

"Over"

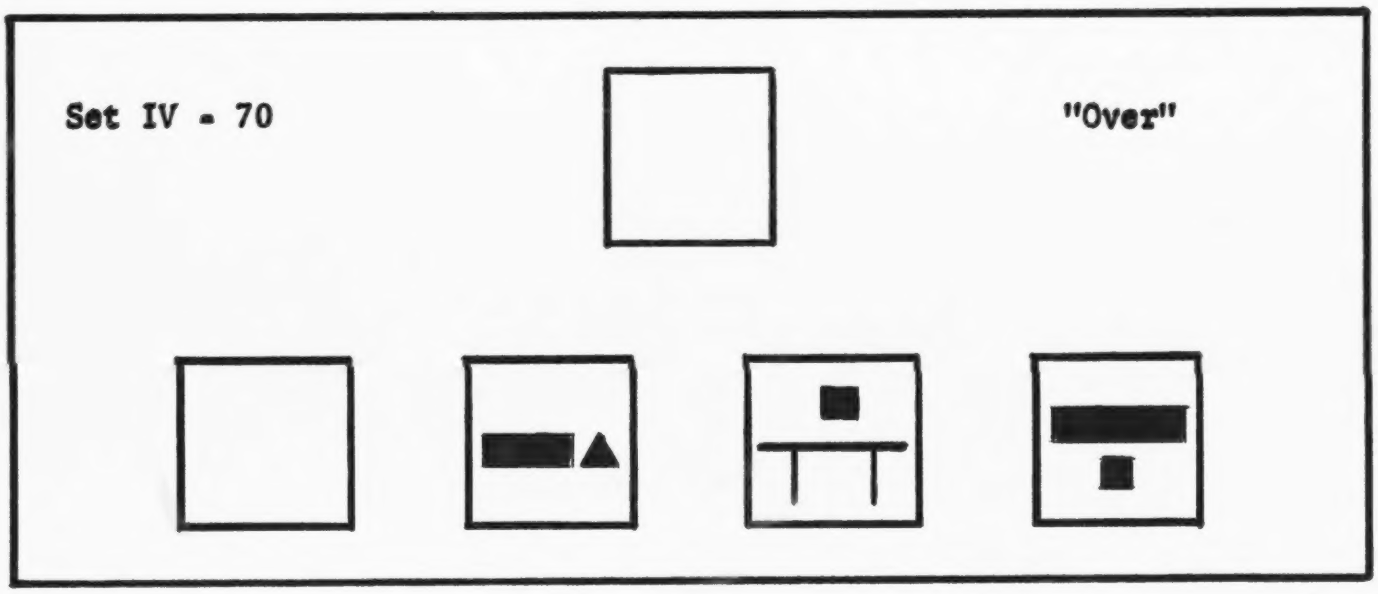

Set III - 100

"Over"



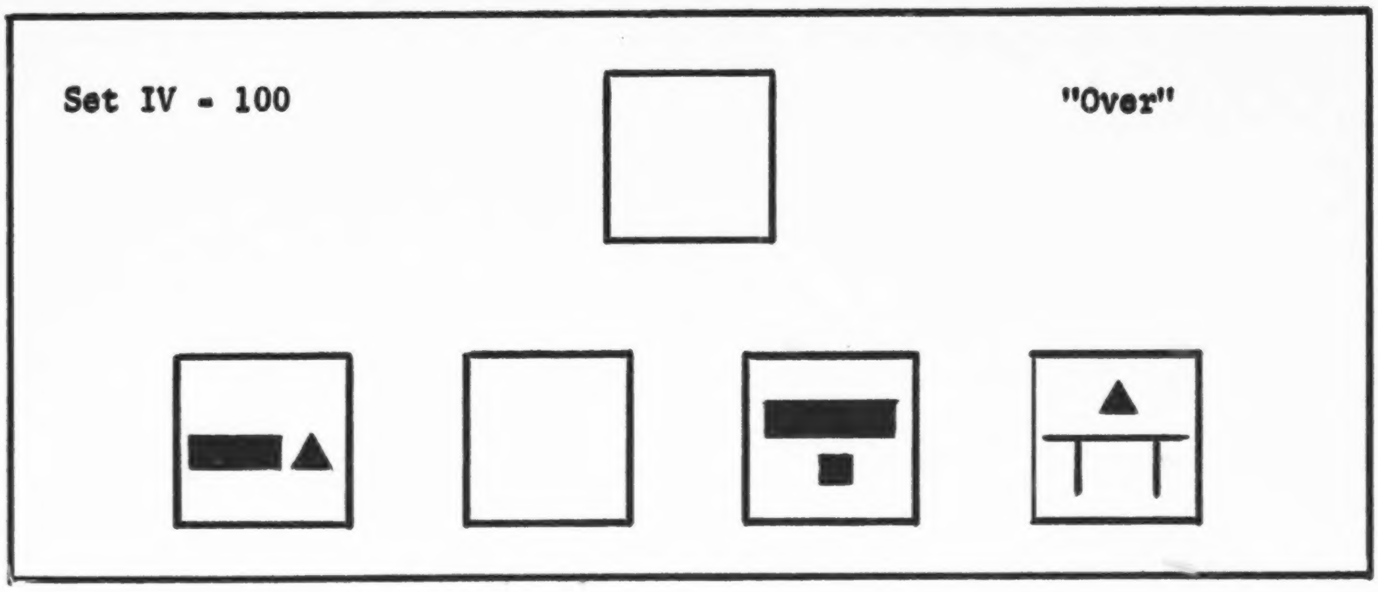
Set IV - 30

"Over"



Set IV - 70

"Over"



Set IV - 100

"Over"

APPENDIX E

A. ASCP Instrumentation System

1. General

The ASCP machine was designed to present the ASCP materials in both correction and non-correction treatments. This required that the machine operate in four modes.

Mode I presented the auditory discrimination items in a correction mode, requiring the subject to make a correct push button response before he could advance to the next item and re-presenting any missed item every 15 seconds until a correct response was given. Mode I permitted the subject to listen to any item as many times as he wanted before making a response.

Mode II presented the auditory discrimination items in a non-correction mode. In the event of a correct push button response the machine immediately advanced to the next item, but when an incorrect response was given the machine "froze" for three seconds before advancing to the next item. The machine paused in Mode II in order to allow the subject all the time that he required in order to make a response but no item was presented more than once. In Modes I and II a correct response was positively reinforced by a 600 cycle pure tone, and an incorrect response was negatively reinforced by a 120 cycle saw-tooth "raspberry."

Mode III presented the self-correction items in the rewind mode. Each new item automatically placed the machine in record operation and allowed the subject to record his version of the master stimulus. The machine then rewound automatically and played back the master stimulus and the subject's version. The subject could listen to the pair as often as he wished, re-record the item, or advance to the next item.

Mode IV presented the self-correction items in a non-rewind mode. In this mode the subject heard a new item every six seconds and his task was simply to repeat the items. His verbalizations were amplified and mixed into his headphone without delay.

All materials were presented to the subject through headphones to minimize the effects of ambient noise and feedback. The system noise at the headphone output was -60 db referred back to the input.

All materials were recorded on Minnesota Mining and Manufacturing Scotch Brand type 175 tape. Five inch, 600' reels were used for each program. This tape was selected from a study of thirty brands and types, because it produced the least head wear and exhibited the fewest signal "drop-outs."

The tape recorder selected for the ASCP machine was the Concertone Model 800-A. This was the lowest cost four track stereo, three motor tape deck with electronically controlled bi-directional playback capability available.

The ASCP control unit was a completely transistorized digital unit designed and fabricated to fulfill the needs of this study. The control unit functioned to present the ASCP materials in the four modes of operation, confirmed the accuracy of the subjects' responses, and provided an instrumentation output by which the subjects' performance was telemetered and recorded via telephone lines. The data supplied by the instrumentation consisted of a "right" pulse, a "wrong" pulse and a "new frame" pulse, from which it was possible to reduce response latency and error rate.

2. Theory of Operation

a. General

In Modes I and II, a stimulus was defined electronically as an auditory signal recorded on track three and played back on Channel B, head pre-amp three. A response was electronically defined as the closing of one of four switches (push buttons). A frame was electronically defined as the time existing between two code groups recorded on track one, and played back on Channel A, head pre-amp one.

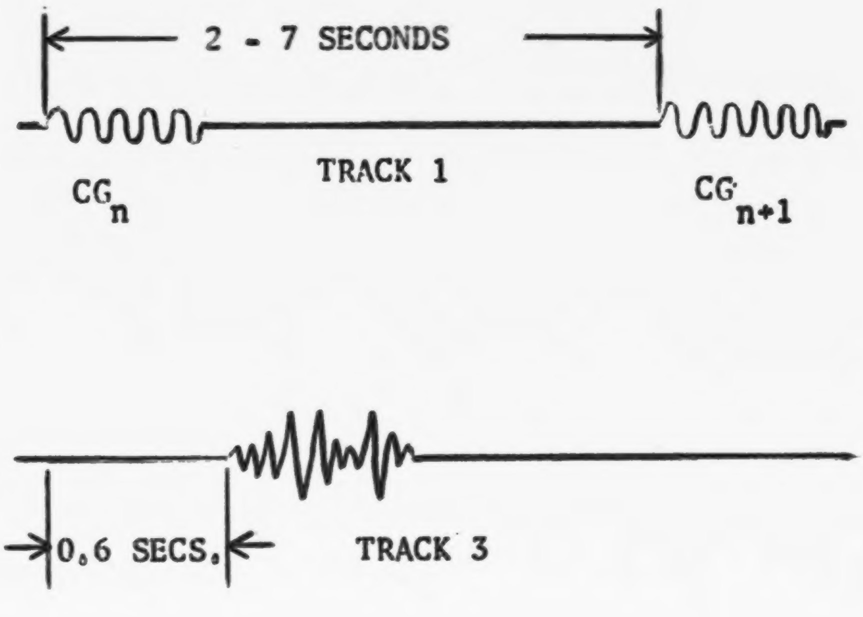


FIGURE A

ELECTRONIC DEFINITION OF A FRAME

A one-to-one correspondence existed between the number of code pulses on track one and the response push buttons.

TABLE A
CORRESPONDENCE BETWEEN CODE AND CORRECT RESPONSE

Correct Button	Code (Number of Cycles of a 1000 Hz Sine Wave)
1	5
2	6
3	7
4	8

An incorrect response was defined as any response for which there is no correspondence between the count stored in the counter and the button pushed, or the simultaneous pressing of more than one push button.

The code channel (Ch. A, PB amp one) of the Concertone was modified so that it played back in both directions of tape travel, while the stimulus channel (Ch. B, PB amp three) was unmodified and would only play back in the appropriate direction. The Concertone tape direction reverse circuit delay was modified so that tape direction could be changed every two seconds if necessary.

b. Mode I Operation

The design criteria were four in number: (1) the subject would make only one response when the tape recorder was going in the forward direction; (2) the subject would receive confirmation of the accuracy of his response (pure tone if correct, saw-tooth if incorrect); (3) the control unit would advance the tape to the next frame on a correct response; and, (4) the control unit would repeat a frame when the response was incorrect or when no response was made.

See Figure B, ASCP Block Diagram of Mode I Operation, on the following page.

A fifty-pin shorting plug on the rear of the ASCP control unit connected the logic circuits for operation in Mode I. The operator selected and connected the correct plug, loaded the tape, started the tape deck, and pressed a reset button to clear the logic. The operation of the system according to the three response contingencies was as follows:

(1) Subject makes no response:

(a) Code group CG_n is introduced into the counter.

(b) Stimulus is presented 0.6 seconds after the code group is introduced.

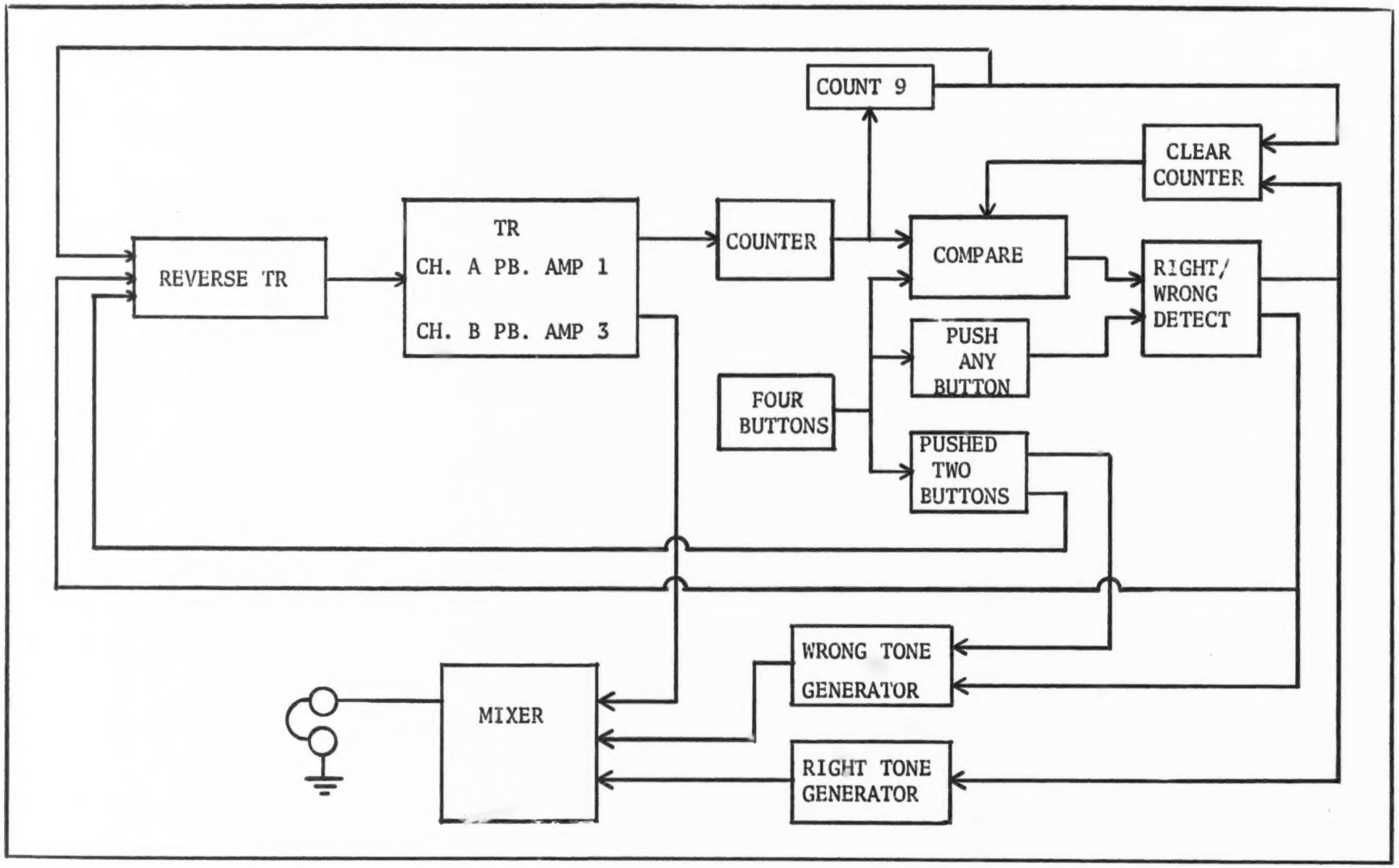

COUNT 9
CLEAR COUNTER
REVERSE TR
TR
CH. A PB. AMP 1
CH. B PB. AMP 3
COUNTER
COMPARE
RIGHT/ WRONG DETECT
PUSH ANY BUTTON
FOUR BUTTONS
PUSHED TWO BUTTONS
MIXER
WRONG TONE GENERATOR
RIGHT TONE GENERATOR

FIGURE B

ASCP BLOCK DIAGRAM OF MODE I OPERATION

(c) Code group CG_{n+1} is introduced into the counter. When the counter reaches a count of nine, the nine gate opens and issues a reverse direction command to the tape recorder.

(d) Counter is cleared.

(e) Recorder reverses and turns off the stimulus channel.

(f) Code group CG_{n+1} is introduced into the counter.

(g) Seven seconds later, CG_n is introduced into the counter. When the counter reaches a count of nine, the nine gate opens and issues a reverse direction command to the tape recorder.

(h) Counter is cleared.

(i) Tape recorder reverses to the forward direction, turning on the stimulus channel.

(j) Code group CG_n is introduced into the counter.

(2) Subject makes a correct response in the forward direction:

(a) Code group CG_n is introduced into the counter.

(b) Stimulus is presented 0.6 seconds after the code group is introduced.

(c) Correct response is made.

(d) A 0.6 second, 600 Hz sine wave signal is mixed in the audio amplifier confirming correct response.

(e) The counter is cleared.

(f) Code group CG_{n+1} is introduced into the counter. (Note: This does not cause a direction change because no code group is larger than eight.)

(3) Subject makes a wrong response in the forward direction:

(a) CG_n is introduced into the counter.

(b) Stimulus is presented 0.6 seconds after code group is introduced.

(c) A wrong response is made. (Either an inappropriate button is pushed, or more than one button is pushed.)

(d) A 0.6 second, 120 Hz saw-tooth signal is mixed in the audio amplifier indicating an incorrect response.

(e) Operation proceeds as in steps (1)(c) through (1)(h) above.

c. Evaluation of Mode I Operation

The ASCP machine operating in Mode I fulfilled the requirements for a corrective teaching machine and allowed the subject to pace himself in that he could hear any item as often as he wished before making a response. The only serious limitation was that no provision had been made to allow the subject to respond when the machine was moving in the reverse direction. This, in turn, constrained the frame time by making it necessary to give the subject a "response window" time which would predictably be long enough for all subjects to respond. This meant that the turn-around time was very long; fifteen seconds were required to re-present a seven second frame. Further, it meant that the faster subjects were forced to proceed at something below their optimum rates.

The lack of any provision for a response in the reverse direction presented another drawback. Note that in the reverse direction, code group CG_{n+1} is stored in the counter. If the subject pushes a button which corresponds to CG_{n+1} at this time, the machine will continue in the reverse direction for two frames, reversing again on CG_{n-1} and forcing the subject to repeat a frame to which he had correctly responded.

d. Mode II Operation

The design criteria were four in number: (1) the subject would have unlimited time to respond; (2) the subject would receive confirmation of the accuracy of his response; (3) the machine would immediately proceed to the next item when a correct response was made; and, (4) the machine would "freeze", i.e., stop and turn off the audio channel after the wrong tone, for three seconds, when a wrong response was made.

Figure C, ASCP Block Diagram of Mode II Operation, is on the following page.

To operate the ASCP machine in Mode II, the operator selected and plugged in the appropriate shorting plug, loaded the tape, started the tape transport, and pushed the reset button. The operation of the machine according to the three response contingencies was as follows:

(1) Subject makes a correct response immediately after stimulus presentation:

(a) Code group CG_n is introduced into the counter.

(b) Stimulus is presented 0.6 seconds after the code group is introduced.

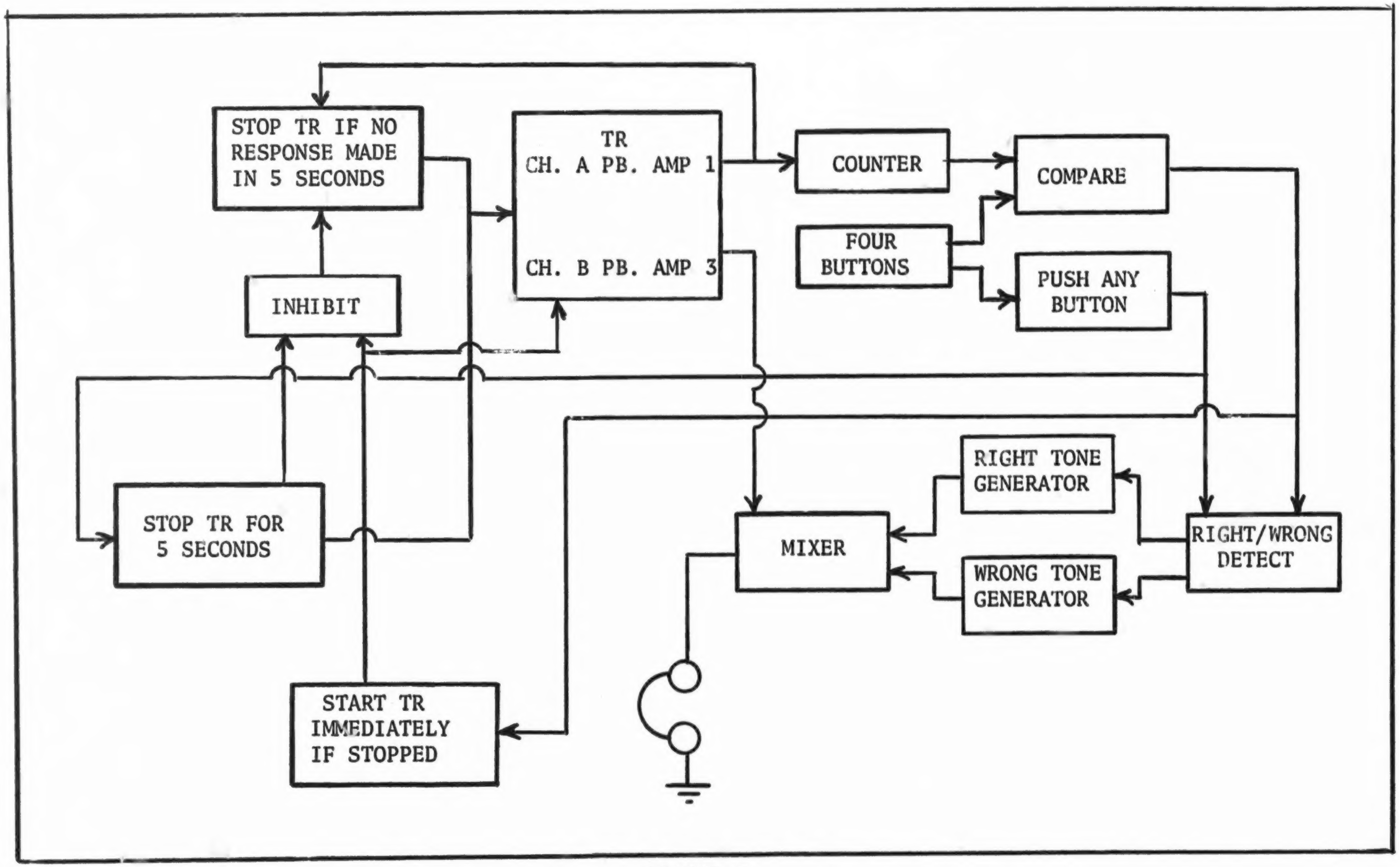

STOP TR IF NO RESPONSE MADE IN 5 SECONDS
TR
CH. A PB. AMP 1
CH. B PB. AMP 3
COUNTER
COMPARE
FOUR BUTTONS
PUSH ANY BUTTON
INHIBIT
STOP TR FOR 5 SECONDS
RIGHT TONE GENERATOR
WRONG TONE GENERATOR
MIXER
RIGHT/WRONG DETECT
START TR IMMEDIATELY IF STOPPED

FIGURE C

ASCP BLOCK DIAGRAM OF MODE II OPERATION

(c) Correct response is made.

(d) A 0.6 second, 600 Hz sine wave signal is mixed in the audio amplifier confirming correct response.

(e) Counter is cleared and tape proceeds to CG_{n+1}.

(2) Subject makes an incorrect response immediately after stimulus presentation:

(a) Code group CG_n is introduced into the counter.

(b) Stimulus is presented 0.6 seconds after the code group is introduced.

(c) Incorrect response is made.

(d) A 0.6 second, 120 Hz saw-tooth signal is mixed in the audio amplifier indicating an incorrect response.

(e) "Tape recorder stop" command is issued and audio is turned off.

(f) Three second pause.

(g) "Tape recorder start" command is issued.

(h) Audio is turned on and counter cleared.

(i) Tape proceeds to CG_{n+1}.

(3) Subject delays response:

(a) Code group CG_n is introduced into the counter.

(b) Stimulus is presented.

(c) No response given for five seconds after introduction of CG_n.

(d) "Tape recorder stop" command is issued, but audio is left on.

(e) Response made; machine operates according to the above contingencies.

e. Evaluation of Mode II Operation:

The ASCP machine in Mode II fulfilled the requirements for a non-corrective teaching machine for the purposes of this study. No flaws in the design criteria were noted and the only limitations of the system were introduced by component reliability, which will be discussed at the end of this section.

f. Mode II Operation

The design criteria for Mode III operation were four: (1) the ASCP machine would automatically record and play back the subject's verbal responses to an auditory stimulus; (2) the subject could listen to the recorded verbalization as often as he wished; (3) the subject could re-record any frame as often as he wished; and, (4) the subject could advance to the next item when he was satisfied with his verbalization.

Tape preparation and playback conditions for Modes I and II were altered somewhat to meet Mode III criteria. The electronic definition of a frame remained the same, with the exception that all code groups were "fives." The stimulus was recorded on track two and played back through Channel A, head pre-amp 2. The subject's responses (verbal approximations of the stimulus) were recorded and played back on Channel B, head pre-amp 4.

See Figure D, ASCP Block Diagram of Mode III Operation, on the following page.

A fifty-pin shorting plug at the rear of the control unit connected the logic circuits for Mode III operation. The operator selected the appropriate plug, loaded the tape, started the tape deck, and pushed the reset button. The subject was required to manipulate a two-position, momentary-contact toggle switch on the front of the control unit to indicate his requirements, i.e., advance to the next frame, or re-record. This switch automatically placed the tape recorder in record mode. The operation of the machine according to the three response contingencies were as follows:

(1) Subject records response, listens once, and advances to the next item:

(a) The subject is instructed to hold the toggle switch until he hears the first stimulus.

(b) Code group CG_n is introduced into the counter.

(c) Stimulus is presented 0.6 seconds after the code group is introduced.

(d) Subject releases the toggle switch.

(e) Tape recorder is in "record," and subject verbalizes his approximation of the stimulus.

(f) Code group CG_{n+1} is introduced into the counter and a count of nine commands the recorder to reverse and shift out of "record" into "playback."

(g) Code group CG_n is introduced into the counter, and a count of nine commands the recorder to reverse to the forward direction.

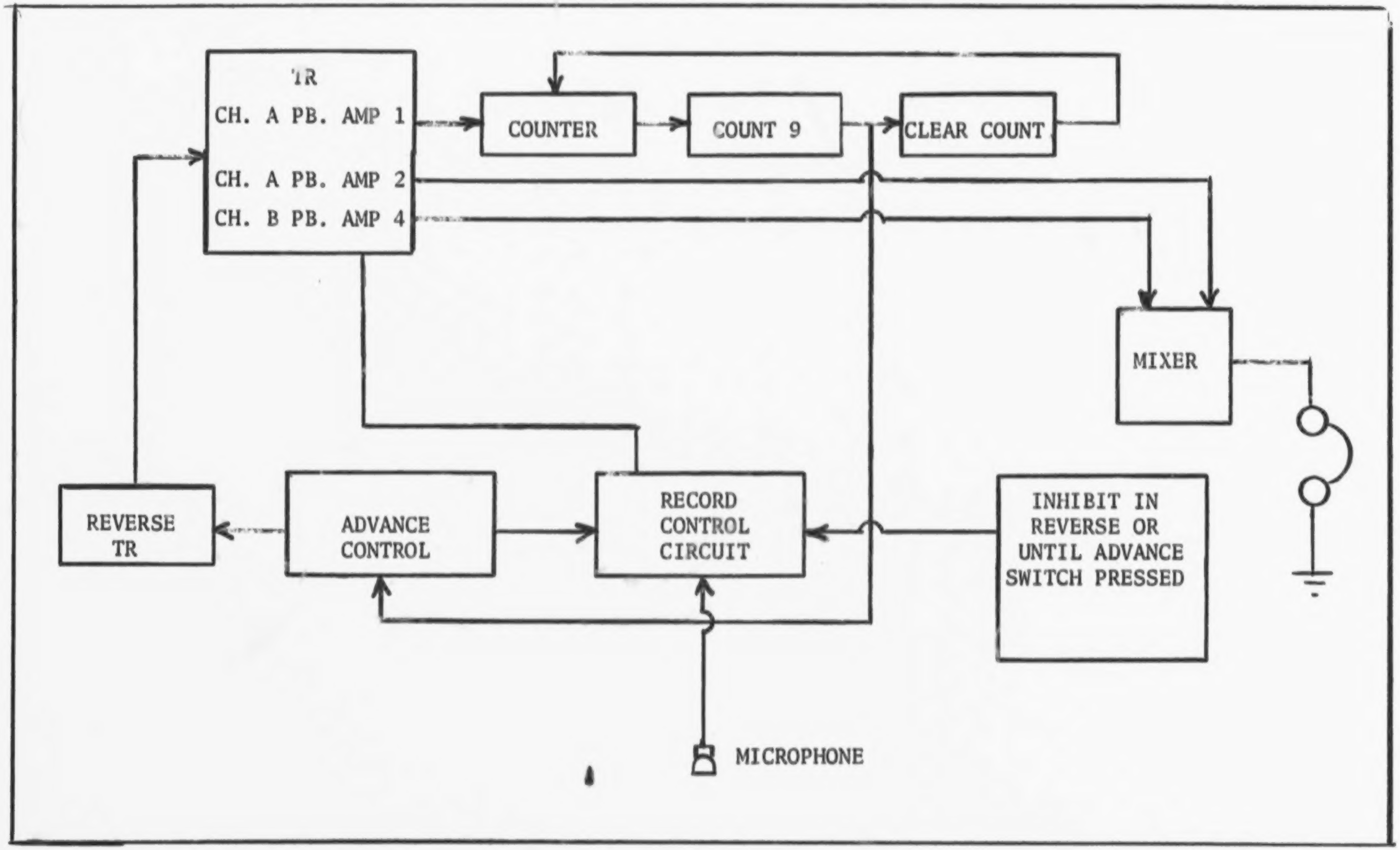

TR
CH. A PB. AMP 1
CH. A PB. AMP 2
CH. B PB. AMP 4
COUNTER
COUNT 9
CLEAR COUNT
MIXER
REVERSE TR
ADVANCE CONTROL
RECORD CONTROL CIRCUIT
INHIBIT IN REVERSE OR UNTIL ADVANCE SWITCH PRESSED
MICROPHONE

FIGURE D

ASCP BLOCK DIAGRAM OF MODE III OPERATION

(h) The subject hears the stimulus and his recorded version.

(i) The subject approves of his version and presses the toggle switch (thus over-riding the count of nine operation) until he hears the next stimulus item.

(2) Subject records response and then listens as often as he chooses before deciding to re-record or advance:

(a) Operation identical to steps (1)(a) through (1)(h) above.

(b) Subject wishes to hear playback again; he does nothing.

(c) Count of nine operation keeps machine in the frame allowing subject to listen as often as he wishes.

(3) Subject elects to re-record the frame:

(a) Operation identical to steps (1)(a) through (1)(h) in response contingency one.

(b) Subject elects to re-record the frame.

(c) Subject momentarily presses the toggle switch which places the tape recorder in "record" but does not over-ride the count of nine operation.

g. Evaluation of Mode III Operation

The ASCP machine fulfilled the needs of the study in this mode of operation. The only drawback to the system in this mode was that it was sometimes difficult to instruct the subjects in the handling of the control switch. It was noted that two switches might have made instruction of subjects simpler.

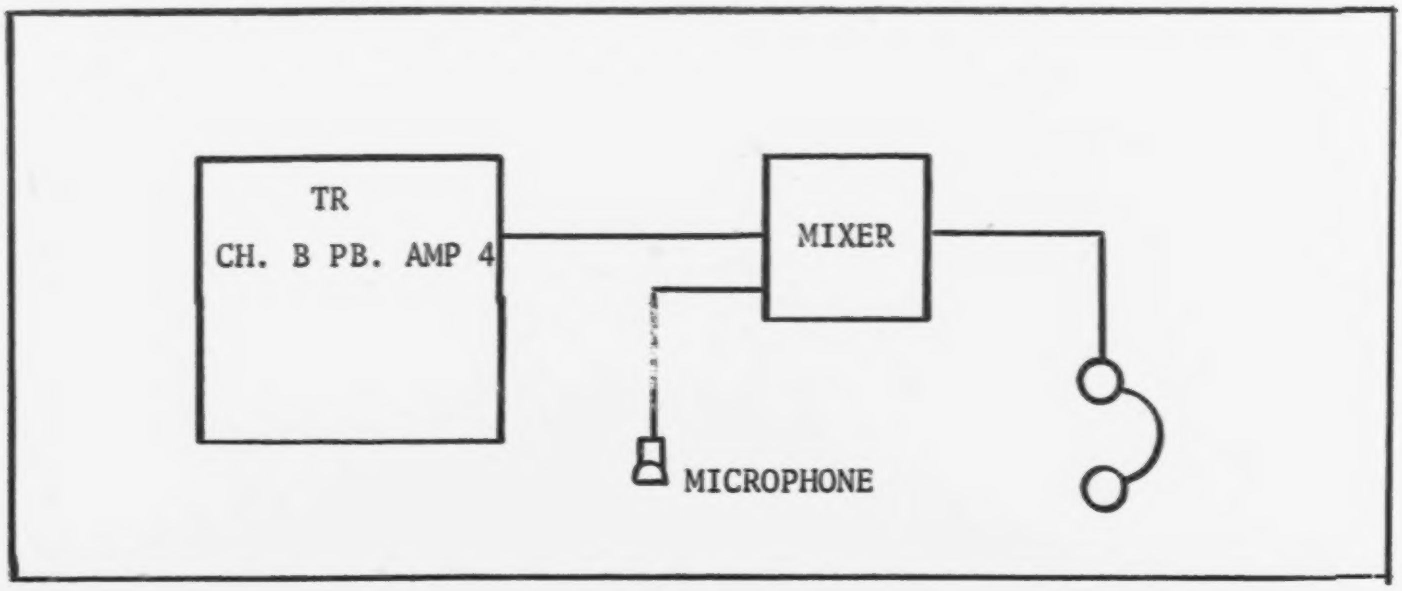


FIGURE E

ASCP BLOCK DIAGRAM OF MODE IV OPERATION

h. Mode IV Operation

The design criterion for Mode IV was that the subject would listen to the sequential stimuli and his verbal output would be amplified and fed back to him over the headphones without delay. In Mode IV operation, the digital logic was disconnected through the fifty-pin shorting plug at the rear of the unit, and the tape recorder audio output was mixed with the output of the subject microphone. The unit functioned as a simple tape player.

i. Evaluation of Mode IV Operation

The unit fulfilled the requirements of the study in this mode, and no limitations were noted during field operation.

j. Operation of the ASCP Instrumentation

The design criterion for the instrumentation system was that the system would provide a record of the accuracy of the subject response and the response latency associated with each frame.

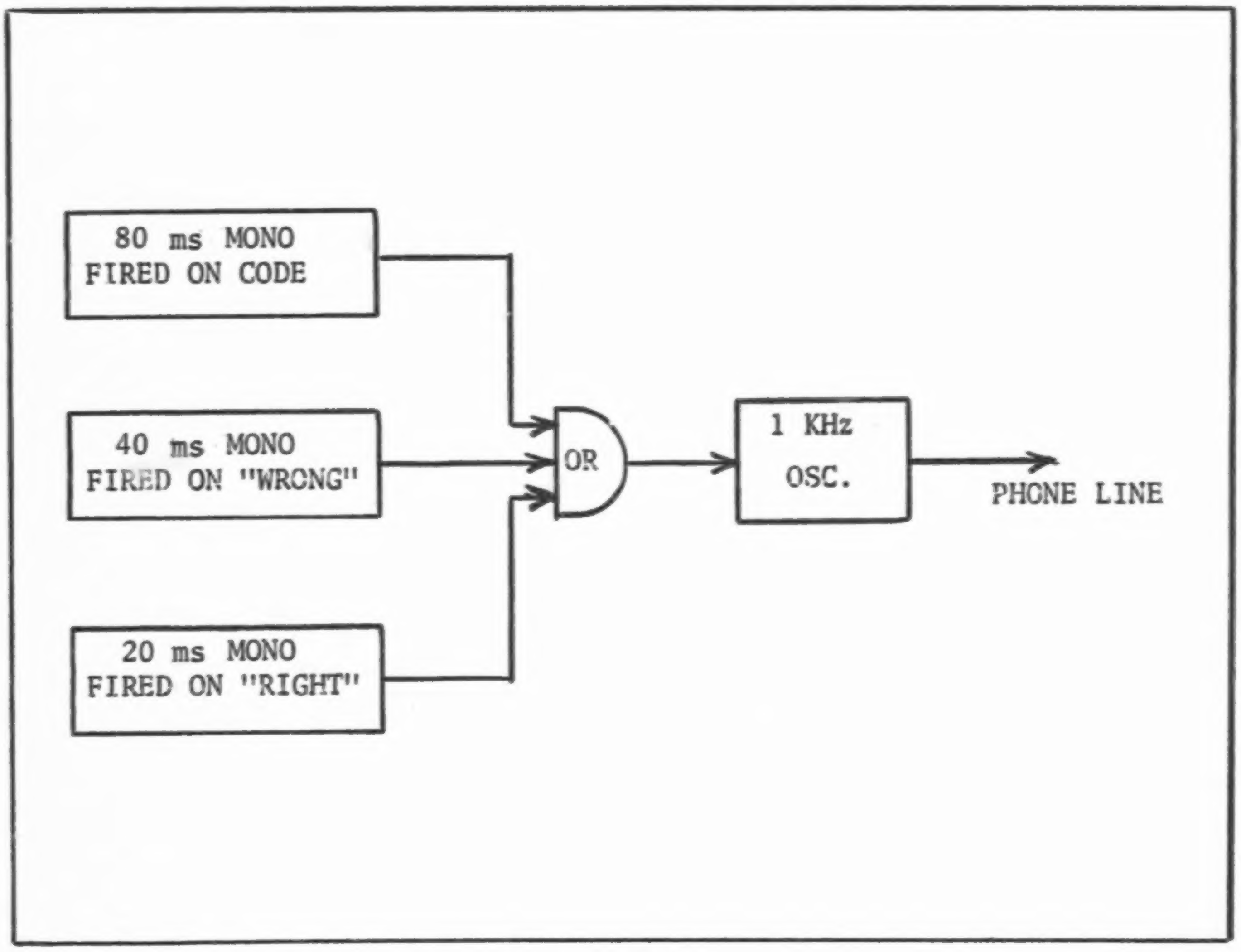


FIGURE F

ASCP BLOCK DIAGRAM OF INSTRUMENTATION OPERATION

The instrumentation system consisted of three monostable multivibrators which were adjusted to give outputs of 10, 20, and 40 milliseconds duration. These three mono's were OR gated together so that an output from any one would supply power to a 1,000 Hz oscillator. The output of the oscillator was connected to a standard phone line which terminated at the Communications Research Laboratory in an Ampex FR-100, seven track instrumentation tape recorder. The data reduction system consisted of a shaping circuit which shaped the bursts of 1,000 Hz to a single pulse whose duration was proportionate to the duration of the burst of sine wave input, and a counter/printer combination which measured and recorded the period of the pulses or the period between the pulses.

k. Evaluation of the ASCP Instrumentation

The system proved to have several inadequacies, the most serious of which was caused by random noise on the telephone lines which was often greater in amplitude than the instrumentation signal itself and caused the loss of about four percent of the data frames.

l. Operation of the Tape Preparation Code Generator

The design criteria for the code generator were two in number: (1) the device would provide a code output which when recorded on the ASCP tapes would be compatible with the ASCP programming unit; and, (2) the device would supply code outputs at regular, adjustable intervals of time.

See Figure G, ASCP Block Diagram of the Code Generator, on the following page.

The code generator operation was as follows: The timer was adjusted to the desired frame time, and the light flashed at these intervals, staying on for 0.6 seconds. When the light went off, the talker read the next stimulus item. The talker also manipulated the four switches on the code generator so that the appropriate code was recorded for each stimulus item. When switch one was closed and the timer turned on the light, power was applied to the 1,000 Hz astable multivibrator for 5 milliseconds by the first monostable multivibrator, thus generating five complete cycles of 1,000 Hz square waves. These square waves were then filtered to approximate sine waves and recorded on the ASCP program tapes.

m. Evaluation of the Code Generator

The code generator fulfilled the requirements of the study, and its principle advantages were its electronic simplicity and low cost. The limitations of the code generator were that the talkers found it difficult to handle the code generator and produce the ASCP stimulus frames, the code generator mono's required continuous monitoring and adjustment, and the output was a poor approximation of a sine wave.

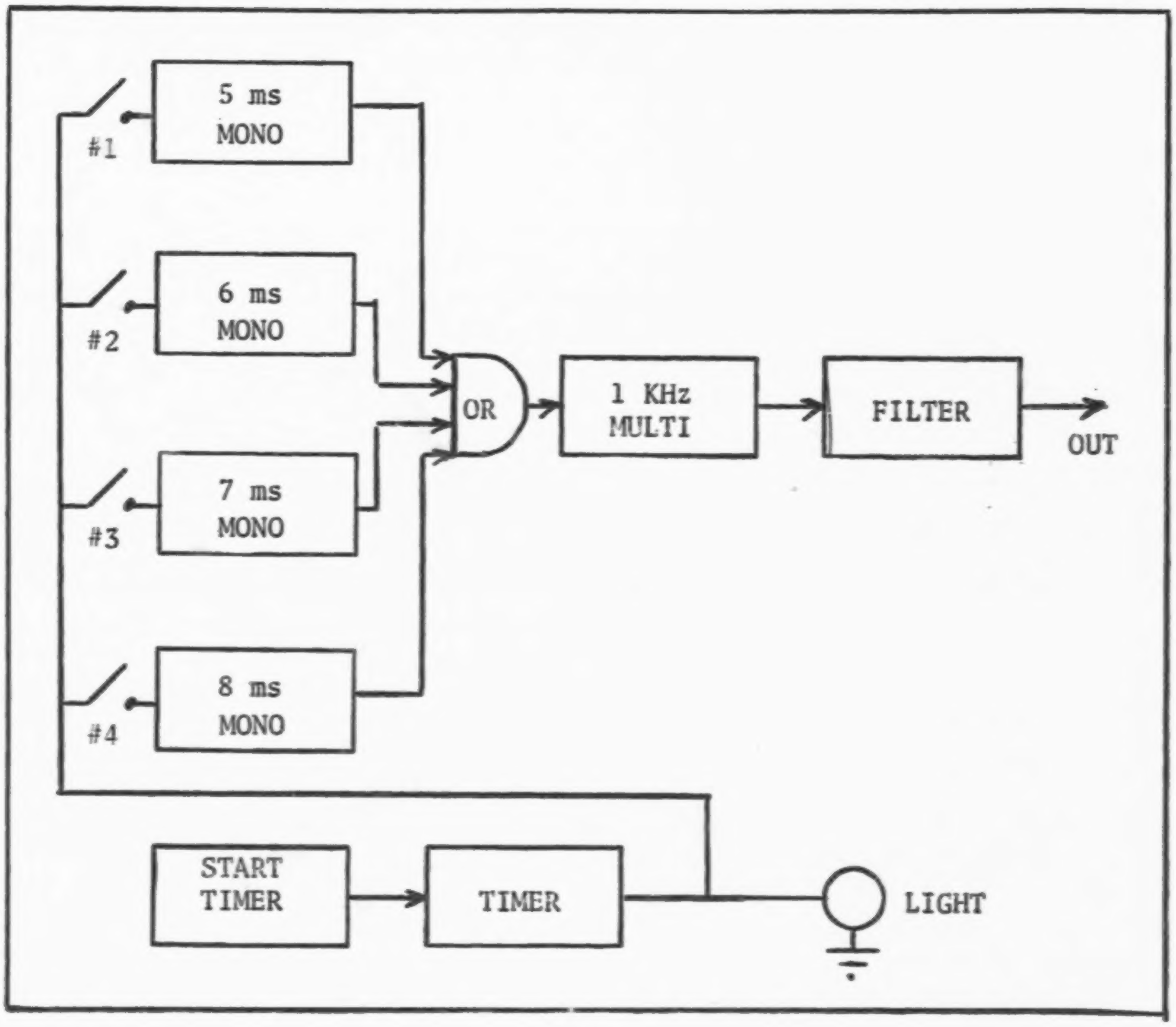


FIGURE G

ASCP BLOCK DIAGRAM OF THE CODE GENERATOR

n. Evaluation of the ASCP Instrumentation System

The ASCP Instrumentation System demonstrated the feasibility of producing a relatively low cost teaching machine system for the presentation of Automated Speech Correction Programs. The field test was adequate to point up component failures and design inadequacies, while at the same time demonstrating the system strengths.

The ASCP machines were operated in the field for three months. Each machine was in use for an average of three hours per school day, and an average of 22,000 frames was presented on each machine. The settings in which the machines operated varied in each school and ranged from a pleasant air-conditioned library to a clean and well-lighted but super-heated janitor's closet. Two component classes, switches and relays, contributed almost all of the machine failures in the field. The switches selected for the student response push buttons proved to be totally inadequate to the demands placed on them and called for frequent maintenance. The ASCP tape recorder was controlled with three relays in the ASCP control unit. These relays introduced transients into the control unit in Modes I, II, and III, causing the machine to skip about one frame in every thousand. With aging and contact erosion, the relays became progressively less reliable. At the close of this phase of the study, Silicon Controlled Rectifiers which had been prohibitively expensive were approaching a price range that allowed for their purchase, and it was decided to eliminate the control unit relays entirely.

The system demonstrated that the basic digital approach and the circuits themselves were highly reliable, and that a relatively inexpensive tape recorder which was manufactured for home use could give reliable long-life service with only a minimum of ruggedizing modification.

B. ASCS Instrumentation System

1. General

The ASCS machine was designed to present the ASCS auditory discrimination materials in the correction mode and the ASCS self-correction materials in non-rewind mode, i.e., Mode I and IV of the ASCP system. Again, the Concertone recorder was to be used, although a better headphone was selected because some of the subjects in the ASCP study had indicated discomfort with the original inexpensive headphones. The ASCS system was closely related to the ASCP system in over-all design philosophy; the resultant hardware was a third stage prototype with the exception that no further developmental work was done on Mode II and III.

The major design goals in the ASCS system were to incorporate all of the proven reliable features of the ASCP system and to perform the following:

a. Develop a better method of recording code groups on tape.

b. Develop a logic system which would allow the subject to respond at any time in a frame, regardless of the direction of tape travel.

c. Eliminate the possibility of the subject making more than one response per frame or pushing more than one button at a time.

d. Eliminate contact bounce of the response push buttons.

e. Eliminate all relays in the control unit and the tape recorder.

f. Improve the instrumentation system.

In the ASCS system the electronic definition of a frame, stimulus, and response was unchanged. Code generator improvements, discussed later, allowed the frame duration to be varied from 1.5 seconds to infinity. Confirmation of response accuracy was changed to a 0.3 second burst of 1,000 Hz sine wave and the wrong tone was eliminated for clinical reasons. An M&M chocolate candy dispenser and the associated logic and driving circuitry were developed for the machines going to Dixon State School and the Atlanta Speech School, Inc.. The ASCS machine for the Atlanta Veterans Hospital was equipped with a slide projector for visual presentation of stimuli. Associated circuitry drove the projector automatically and synchronously with the verbal stimuli.

The one-to-one correspondence between code and response push button was changed to simplify the decision gates and increase their reliability.

TABLE B
CORRESPONDENCE BETWEEN CODE AND CORRECT RESPONSE

Button	Code Cycles
1	1
2	2
3	4
4	8

This change reduced the number of inputs on the decision gates from four to two, and decreased the loading on the counter outputs.

a. ASCS Mode I Operation

The design criteria for Mode I were: (1) the subject can respond at any time regardless of tape direction; (2) the control unit will lock-out all push buttons after a response is made; (3) the subject can only respond after a new valid code group, i.e., auditory stimulus; and, (4) the subject will only hear an auditory stimulus once if his response is correct regardless of tape direction when he responds.

See Figure G, ASCS Block Diagram of Mode I Operation, on the following page.

The ASCS Mode I operation according to the four response contingencies were as follows:

(1) Subject makes no response:

(a) CG_n is introduced into the counter and the audio is turned on.

(b) 0.6 seconds later subject is presented auditory stimulus.

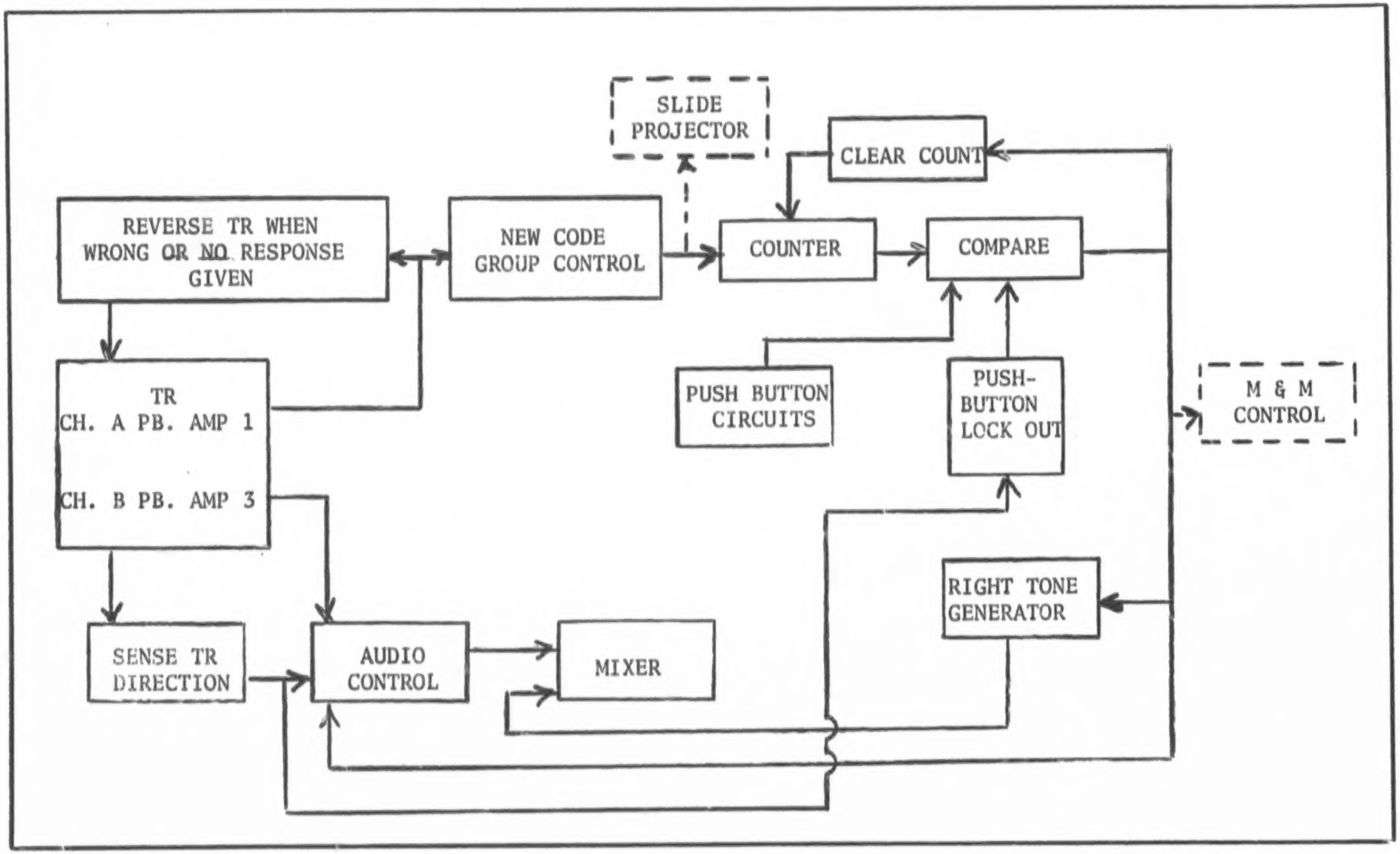

SLIDE PROJECTOR
CLEAR COUNT
REVERSE TR WHEN WRONG OR NO RESPONSE GIVEN
NEW CODE GROUP CONTROL
COUNTER
COMPARE
TR
CH. A PB. AMP 1
CH. B PB. AMP 3
PUSH BUTTON CIRCUITS
PUSH-BUTTON LOCK OUT
M & M CONTROL
RIGHT TONE GENERATOR
SENSE TR DIRECTION
AUDIO CONTROL
MIXER

FIGURE G

ASCS BLOCK DIAGRAM OF MODE I OPERATION

(c) CG_{n+1} reverses the tape recorder and turns off the audio.

(d) CG_n reverses the tape recorder and turns the audio on.

(2) Subject responds correctly in the forward direction:

(a) CG_n is introduced into the counter and the audio is turned on.

(b) 0.6 seconds later the subject hears the stimulus.

(c) Subject responds correctly.

(d) Counter is cleared.

(e) Right tone is mixed in the audio system.

(f) M&M control is activated if applicable.

(g) Audio is turned off.

(h) CG_{n+1} is introduced into the counter.

(3) Subject correctly responds in the reverse direction:

(a) CG_n is introduced into the counter and the audio is turned on.

(b) 0.6 seconds later the subject hears the stimulus.

(c) CG_{n+1} reverses the tape recorder and turns off the audio.

(d) Subject responds correctly.

(e) Counter is cleared.

(f) Right tone is generated.

(g) M&M control is activated if applicable.

(h) CG_n reverses tape recorder but does not turn on audio.

(i) CG_{n+1} is introduced into counter and audio is turned on.

(4) Subject responds incorrectly in any direction:

(a) The ASCS operates exactly as in contingency (1) above with the exception that all response push buttons are locked out after a wrong response and remain that way until the audio is turned on again by the normal operation of the machine.

b. ASCS Mode IV Operation

Mode IV operation was exactly the same as in the ASCP system with the minor exception that the audio system fidelity was improved.

c. ASCS Instrumentation

The design criteria for the ASCS instrumentation were as follows: (1) the system will provide a record of which button the subject pushed and the response latency associated with each frame; (2) further, the system should supply some natural noise immunity to make it more reliable.

See Figure H, ASCS Block Diagram of the Instrumentation System, on the following page.

The ASCS instrumentation system was like that of the ASCP unit with the addition of two more monostable multivibrators so that the push button pressed for each response could be identified. The multivibrators frequency modulated a voltage controlled oscillator whose center frequency was either 1,700 Hz or 2,300 Hz. This oscillator was deviated to the upper edge of its IRIG standard telemetry band for the period of the monostable. This system was employed to take advantage of the superior noise rejection characteristics of frequency modulated systems. The output of the FM instrumentation system was recorded on an instrumentation tape recorder as well as the audio output to which the subject listened.

d. ASCS Tape Preparation Code Generator

The design criteria for the code generator called for the generator to have three modes of operation: (1) manual mode, in which the operator selects the code to be generated and determines the spacing in time between code groups; (2) auto/manual mode, in which the operator selects the code to be generated but the spacing in time between code groups is pre-set and automatically determined; and, (3) full auto mode, in which the code for each frame is read from a punched paper tape and the spacing between code groups is automatically determined.

See Figure I, ASCS Block Diagram of the Tape Preparation Code Generator, ff.

The operation of the code generator was as follows:

(1) The number of cycles of a 1,000 Hz sine wave to be generated by each gate is selected in advance -- 1, 2...15.

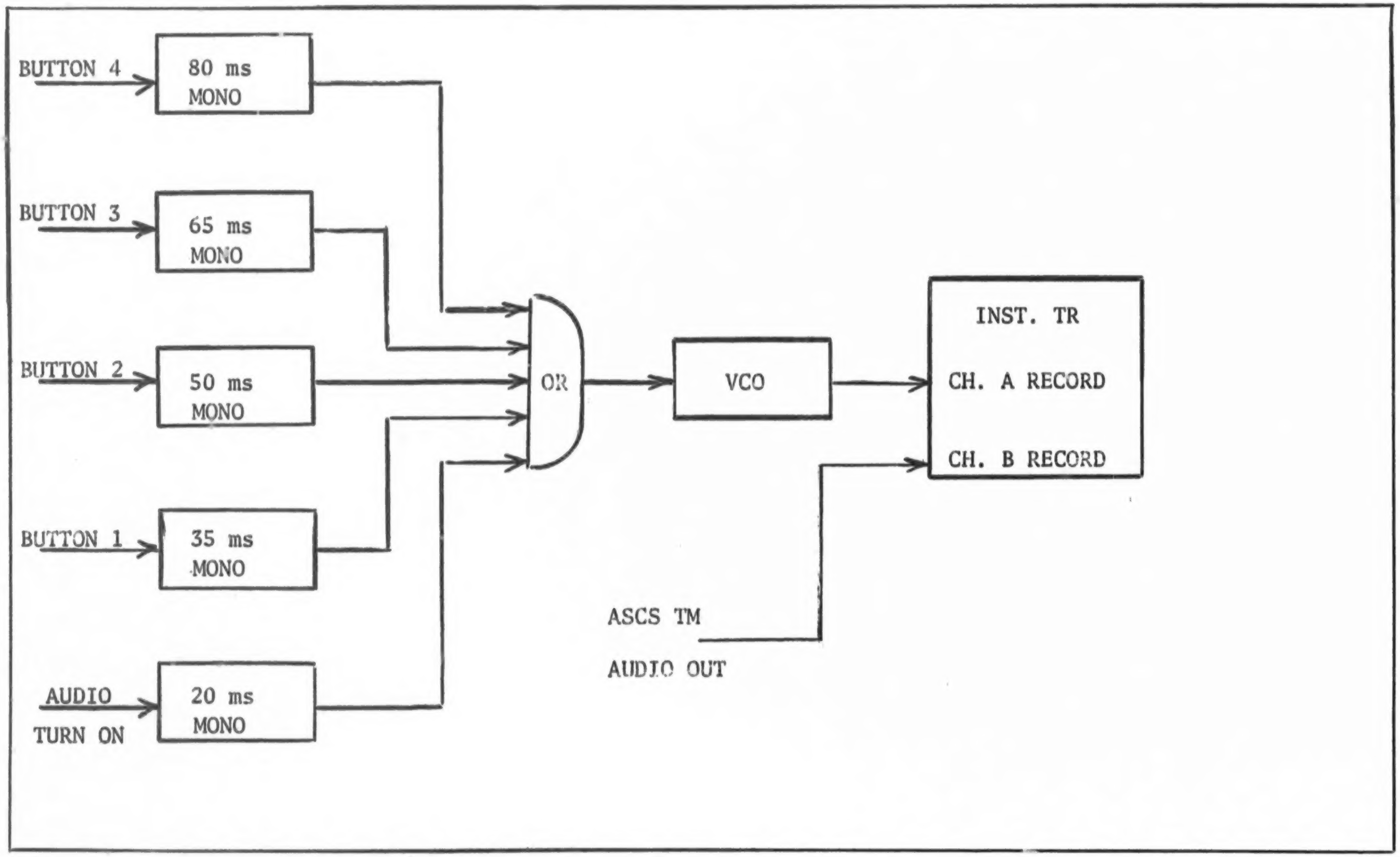

BUTTON 4
80 ms MONO
BUTTON 3
65 ms MONO
BUTTON 2
50 ms MONO
BUTTON 1
35 ms MONO
AUDIO TURN ON
20 ms MONO
OR
VCO
INST. TR
CH. A RECORD
CH. B RECORD
ASCS TM AUDIO OUT

FIGURE H
ASCS BLOCK DIAGRAM OF THE INSTRUMENTATION SYSTEM

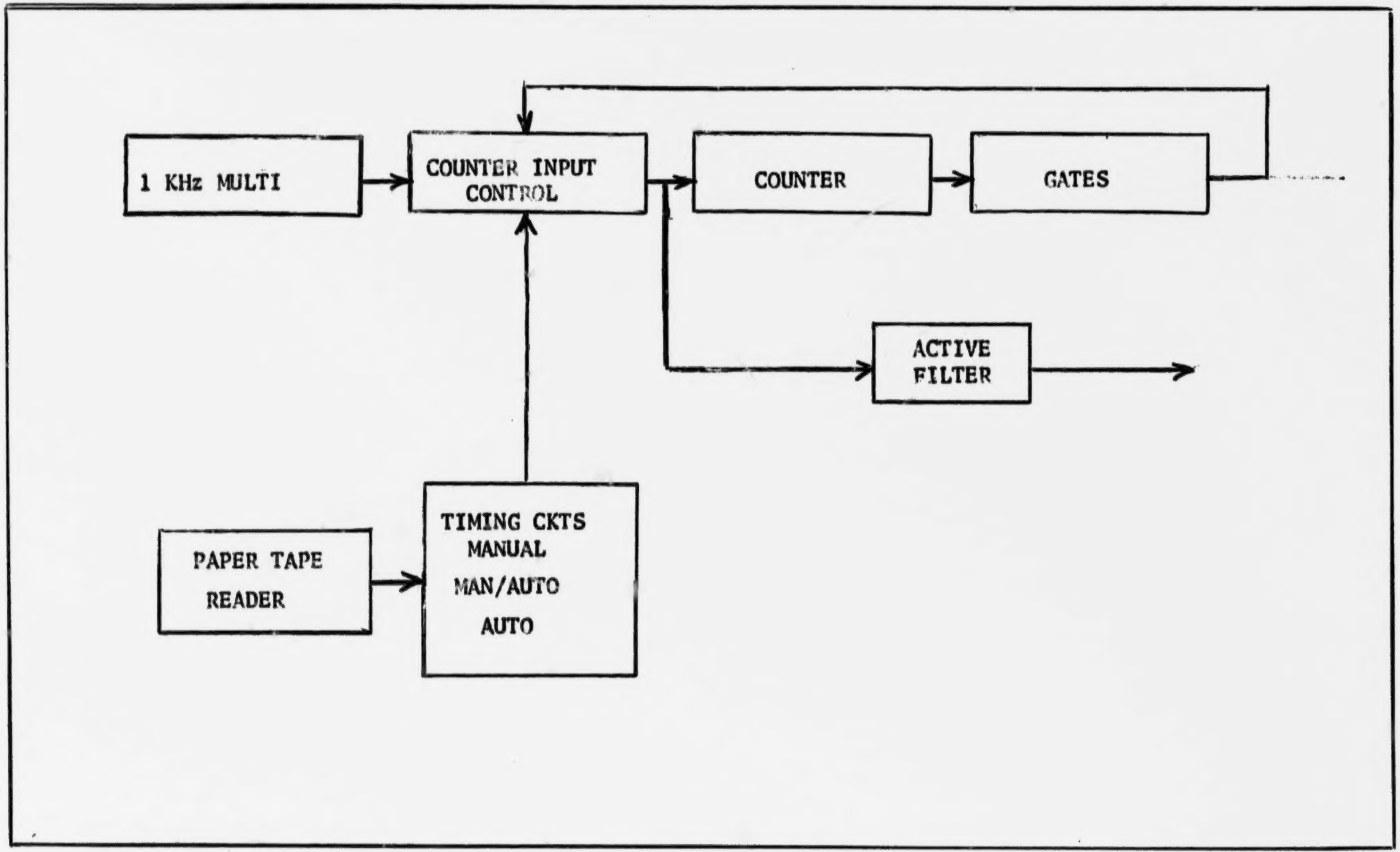

1 KHz MULTI
COUNTER INPUT CONTROL
COUNTER
GATES
ACTIVE FILTER
PAPER TAPE READER
TIMING CKTS
MANUAL
MAN/AUTO
AUTO

FIGURE I

ASCS TAPE PREPARATION CODE GENERATOR

(2) The timing circuit output is fired either manual, manual/auto, or automatic.

(3) The appropriate gate is opened, either by pressing a push button or by the paper tape reader.

(4) The input to the counter opens, and it counts 1,000 Hz square waves.

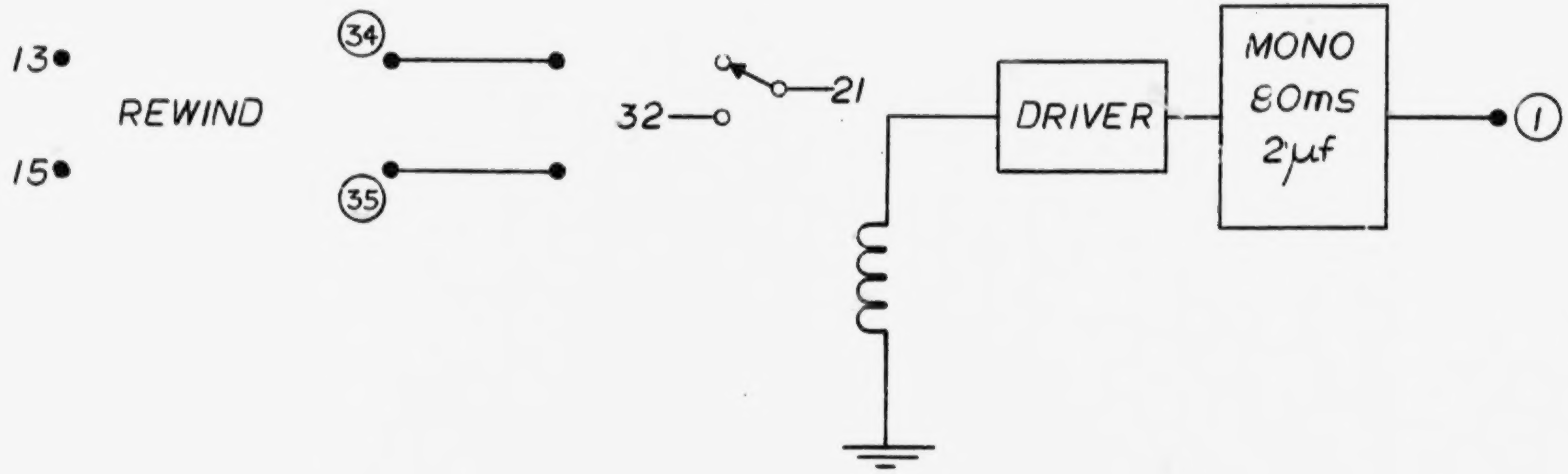
(5) When the selected gate reads the preset count, it issues a command to turn off the input to the counter.

(6) The set of square waves is passed through an active filter to approximate the fundamental 1,000 Hz sine component.

e. Evaluation of the ASCS Instrumentation System

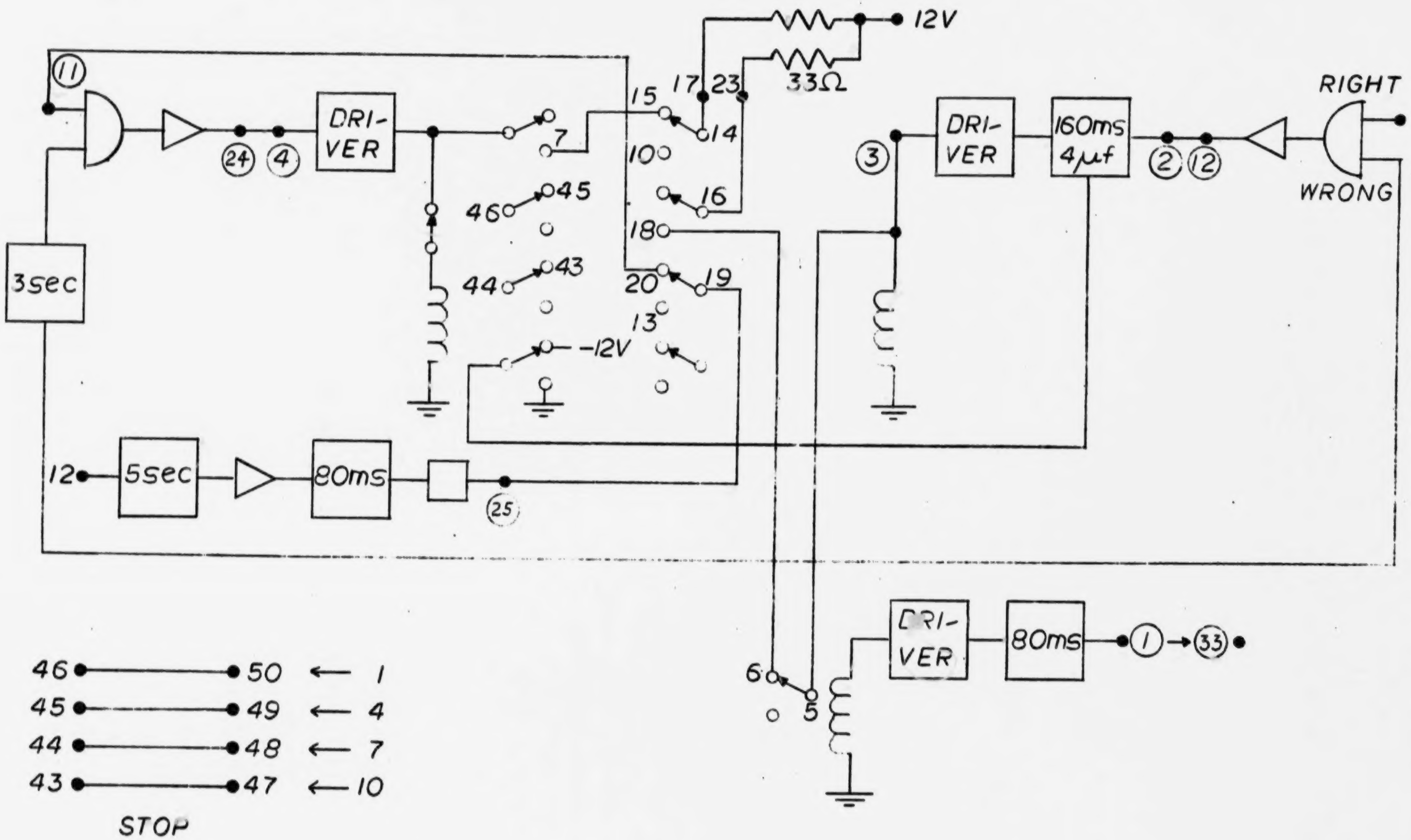
The ASCS system demonstrated greatly improved reliability over the ASCP system. Each ASCS machine was proof-tested by running 2,500 serial frames without a machine failure before it was placed in operation. The only electronic failure was an "Act of God" component breakdown, and this occurred on only one machine. A field modification was made on all ASCS machines to eliminate this component. The design philosophy and implementation were found to be close to ideal for the purposes of the study. The ASCS machine was silent in operation, the audio fidelity was good, and the headphones were apparently comfortable. The ASCS code generator eliminated the problem of having the talkers perform a difficult manual task while also speaking, and allowed the shortening of frame times to durations appropriate to the content of the frame. The ASCS instrumentation output was noise free, and data reduction proceeded at a much faster rate.

MODE I


13
15
REWIND
34
35
32
21
DRIVER
MONO
80ms
2µf
1

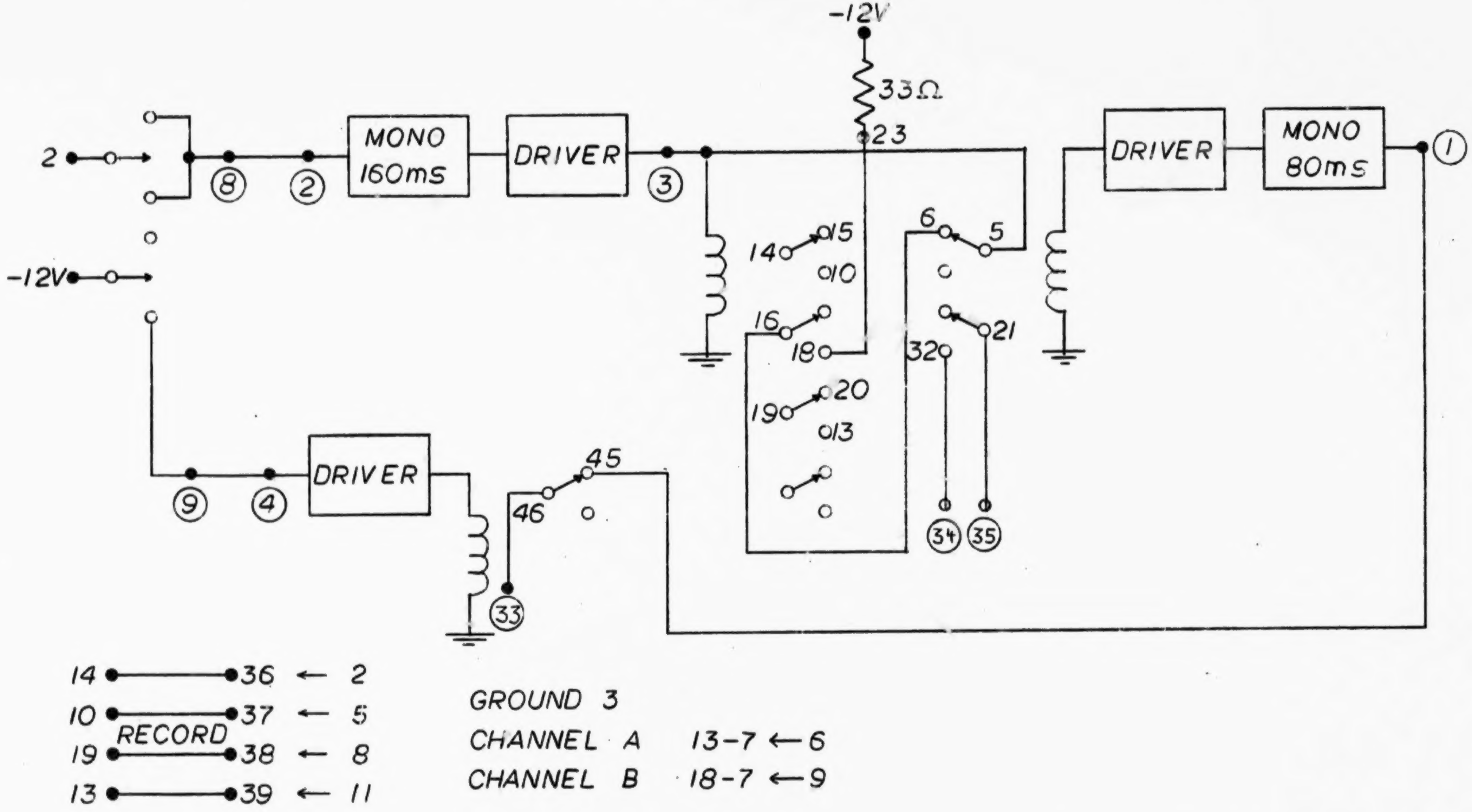
DETAIL FROM
ASCP TEACHING MACHINE

MODE 2


12V
33Ω
17
23
15
14
7
10
16
18
20
19
13
46
45
44
43
-12V
11
24
4
DRI-VER
3sec
12
5sec
80ms
25
3
DRI-VER
160ms 4µf
2
12
RIGHT
WRONG
6
5
DRI-VER
80ms
1
33
46 50 ← 1
45 49 ← 4
44 48 ← 7
43 47 ← 10
STOP

DETAIL FROM
ASCP TEACHING MACHINE

MODE 3


-12V
33Ω
23
2
8
2
MONO 160ms
DRIVER
3
-12V
9
4
DRIVER
14
15
10
16
18
19
20
13
6
5
21
32
34
35
45
46
33
DRIVER
MONO 80ms
1
14 36 ← 2
10 37 ← 5
RECORD
19 38 ← 8
13 39 ← 11
GROUND 3
CHANNEL A 13-7 ← 6
CHANNEL B 18-7 ← 9

DETAIL FROM
ASCP TEACHING MACHINE

MODE 1

1 → 30
32 → 35
34 → 21
27 → 26
33 → 31
50 → 49
48 → 47
40 → 41

27 → 26
48 → 47
50 → 49
40 → 41
31 → 33
32 → 35
34 → 21
1 → 30

MODE 2

11 → 20
25 → 19
12 → 2
28 → 30
6 → 18
17 → 14
23 → 16
5 → 3
15 → 7
24 → 4
33 → 1
31 → 29
40 → 41
50 → 46
49 → 45
44 → 48
43 → 47

33 → 1
15 → 7
2 → 12
3 → 5
4 → 24
11 → 20
17 → 14
23 → 16
6 → 18
25 → 19
31 → 29
40 → 41
50 → 46
49 → 45
48 → 44
47 → 43
28 → 30

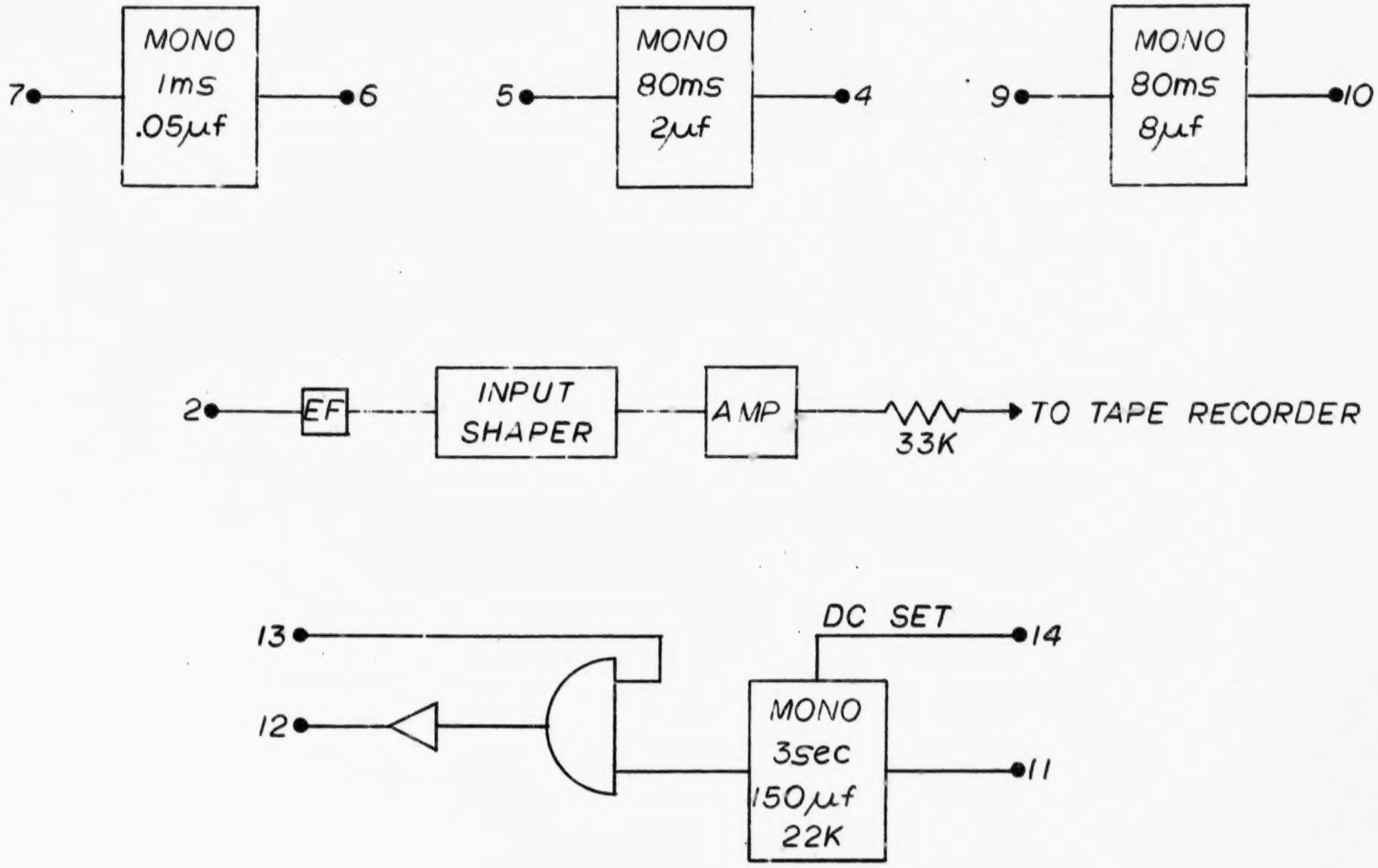
MODE 3

48 → 47
50 → 49
8 → 2
9 → 4
46 → 33
45 → 1
5 → 3
6 → 16
23 → 18
21 → 35
32 → 34
36 → 14
37 → 10
38 → 19
39 → 13

48 → 47
50 → 49
32 → 34
45 → 1
21 → 35
36 → 14
37 → 10
38 → 19
39 → 13
8 → 2
5 → 3
6 → 16
4 → 9
23 → 18
46 → 33

ASCP TEACHING MACHINE

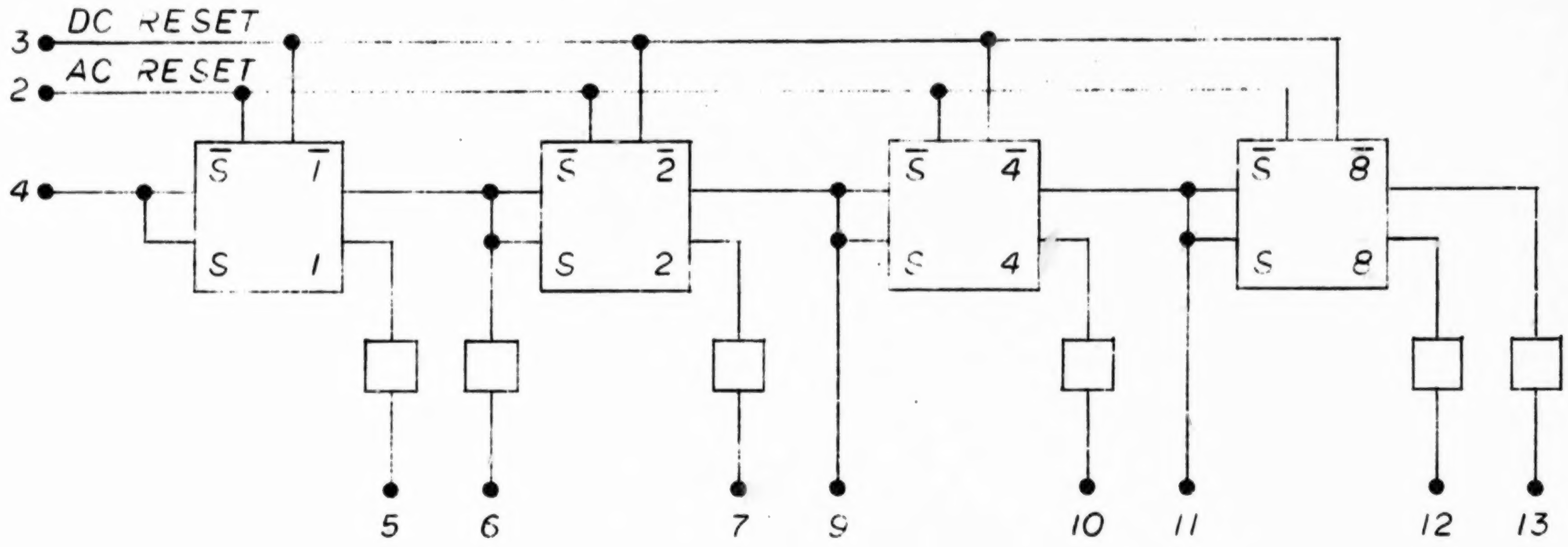
BOARD NO 1



MONO
1ms
.05µf
7
6
MONO
80ms
2µf
5
4
MONO
80ms
8µf
9
10
2
EF
INPUT
SHAPER
AMP
33K
TO TAPE RECORDER
13
12
DC SET
14
MONO
3sec
150µf
22K
11

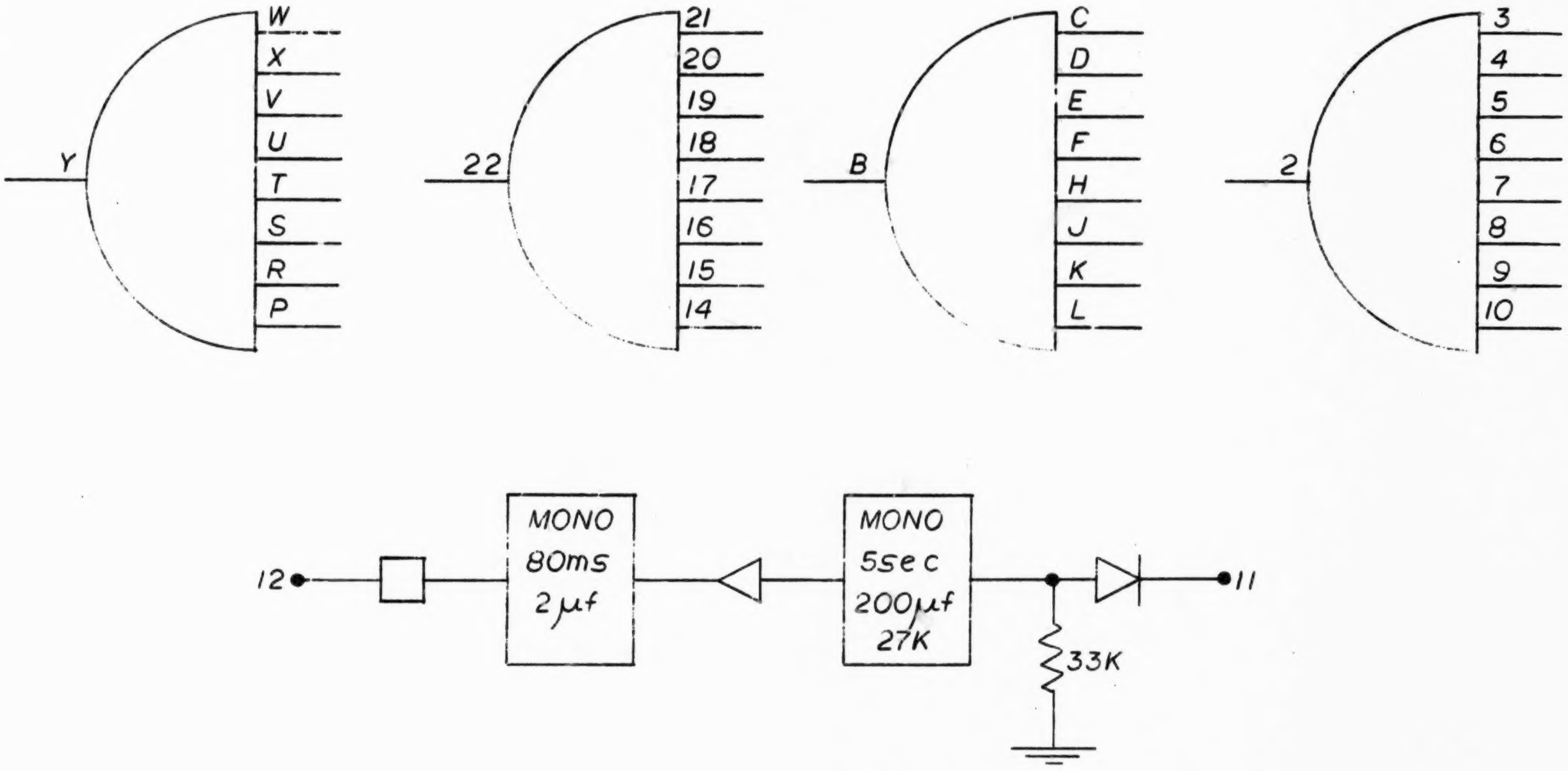
DETAIL FROM
ASCP TEACHING MACHINE

BOARD NO 2


3
DC RESET
2
AC RESET
4
$\overline{S}$
$\overline{1}$
S
1
$\overline{S}$
$\overline{2}$
S
2
$\overline{S}$
$\overline{4}$
S
4
$\overline{S}$
$\overline{8}$
S
8
5
6
7
9
10
11
12
13

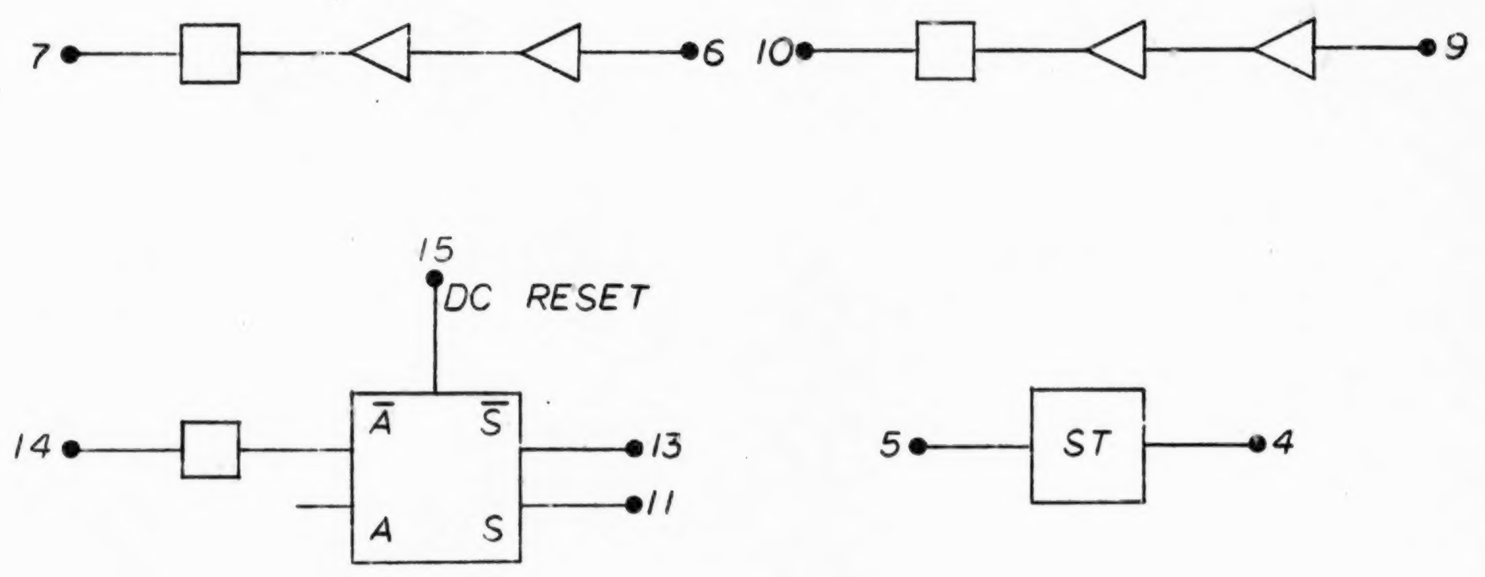
DETAIL FROM
ASCP TEACHING MACHINE

BOARD NO. 3


Y
W
X
V
U
T
S
R
P
22
21
20
19
18
17
16
15
14
B
C
D
E
F
H
J
K
L
2
3
4
5
6
7
8
9
10
12
MONO
80ms
2μf
MONO
5sec
200μf
27K
33K
11

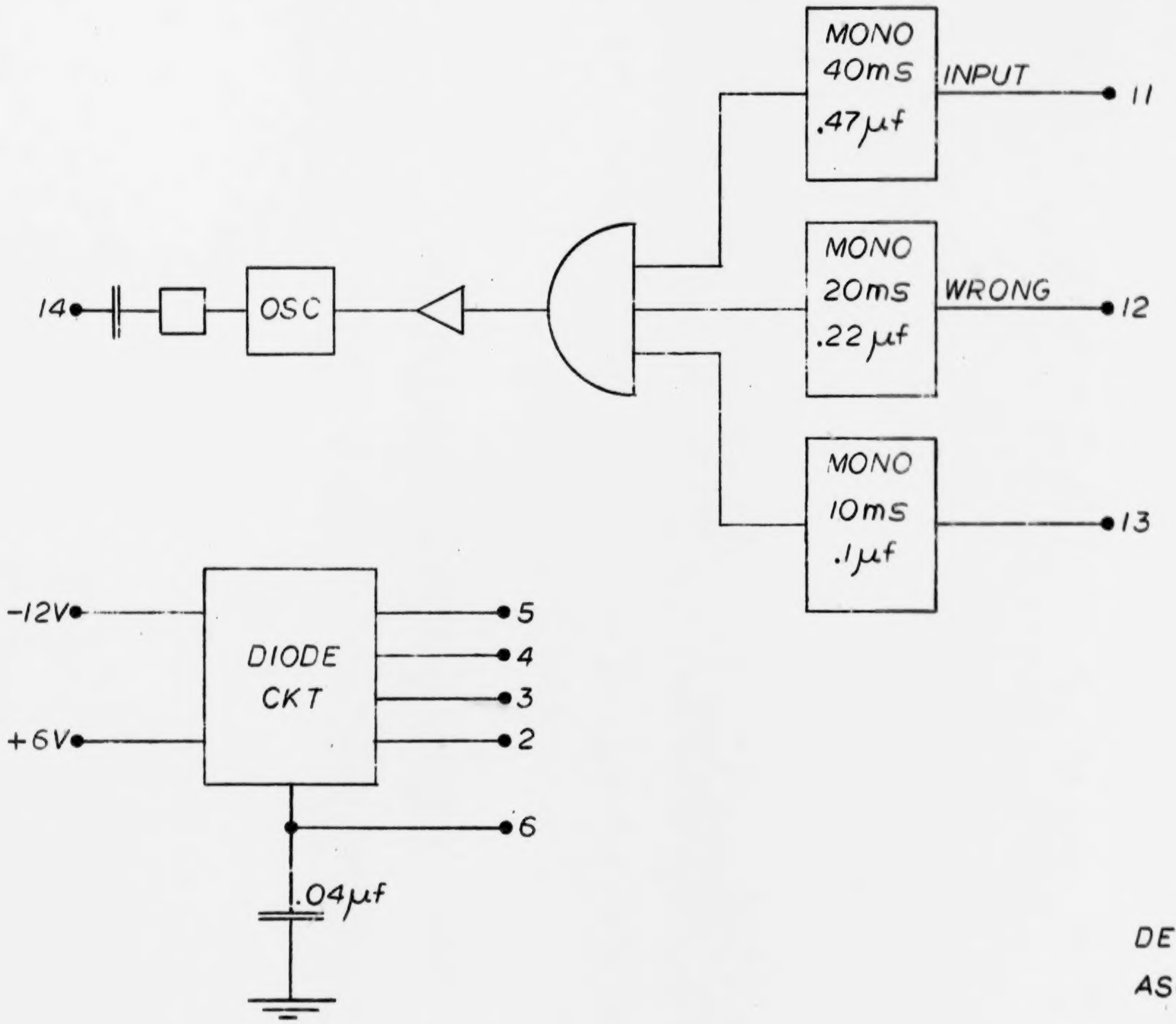
DETAIL FROM
ASCP TEACHING MACHINE

BOARD NO. 4


7
6
10
9
15
DC RESET
$\bar{A}$
$\bar{S}$
A
S
14
13
11
5
ST
4

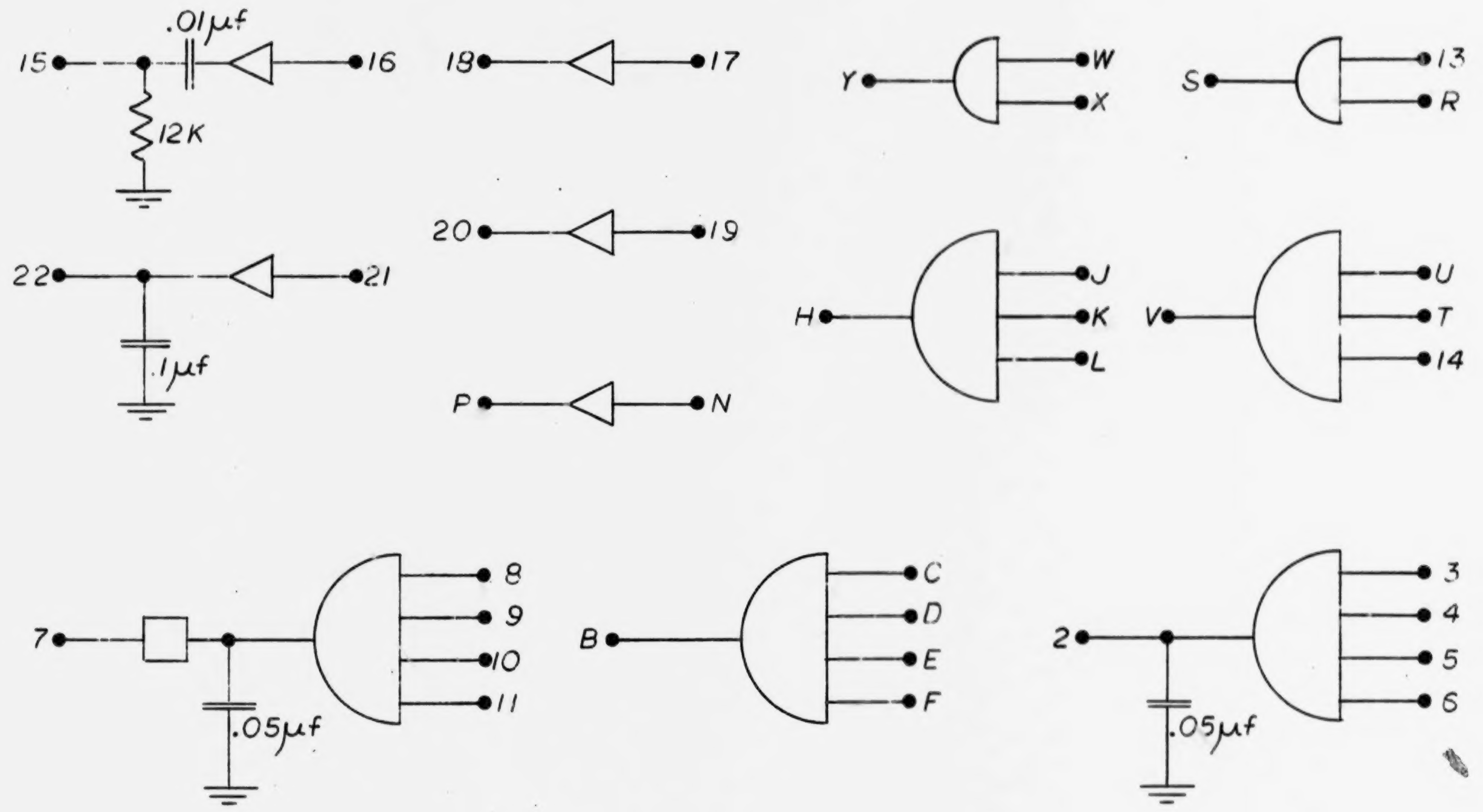
DETAIL FROM
ASCP TEACHING MACHINE

BOARD NO. 5


MONO
40ms
.47μf
INPUT
11
MONO
20ms
.22μf
WRONG
12
MONO
10ms
.1μf
13
14
OSC
-12V
+6V
DIODE
CKT
5
4
3
2
6
.04μf

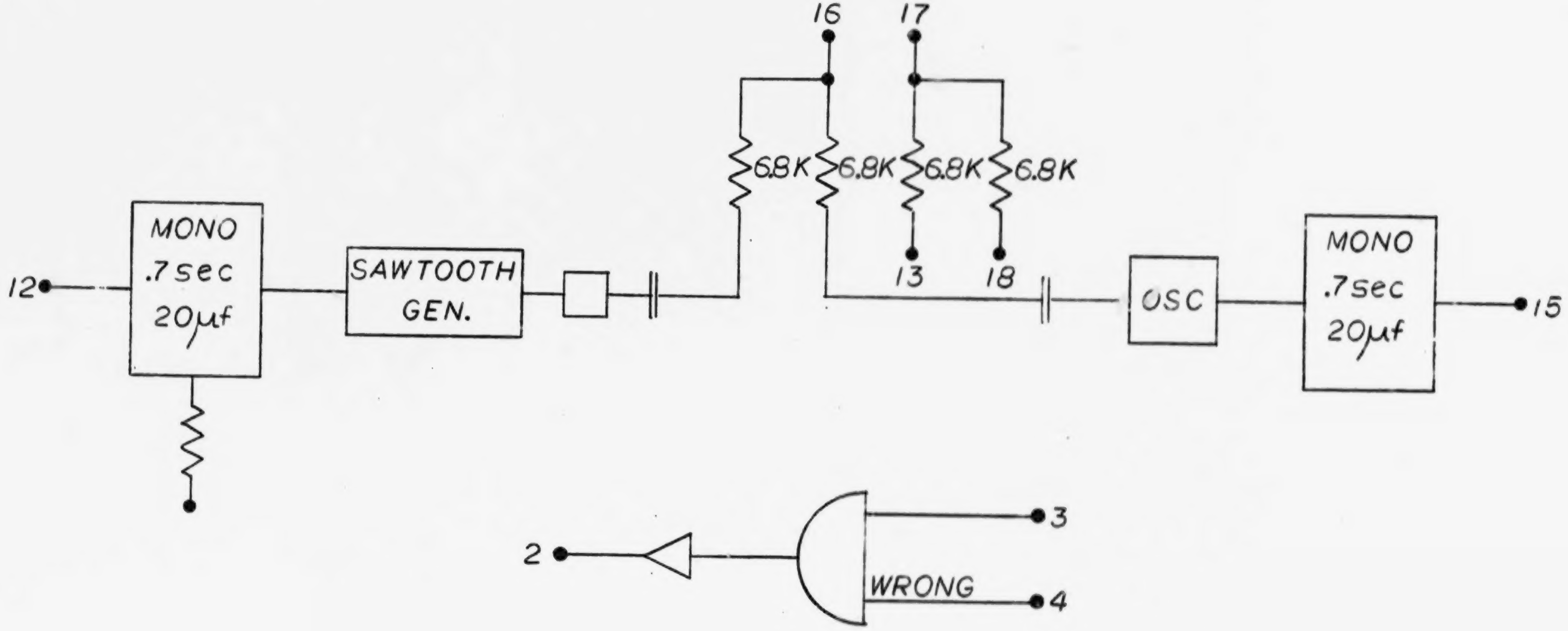
DETAIL FROM
ASCP TEACHING MACHINE

BOARD NO. 6


15
.01μf
12K
16
18
17
20
19
22
.1μf
21
P
N
Y
W
X
S
13
R
H
J
K
L
V
U
T
14
7
.05μf
8
9
10
11
B
C
D
E
F
2
.05μf
3
4
5
6

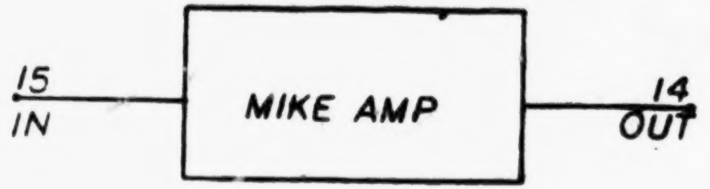
DETAIL FROM
ASCP TEACHING MACHINE

BOARD NO. 7

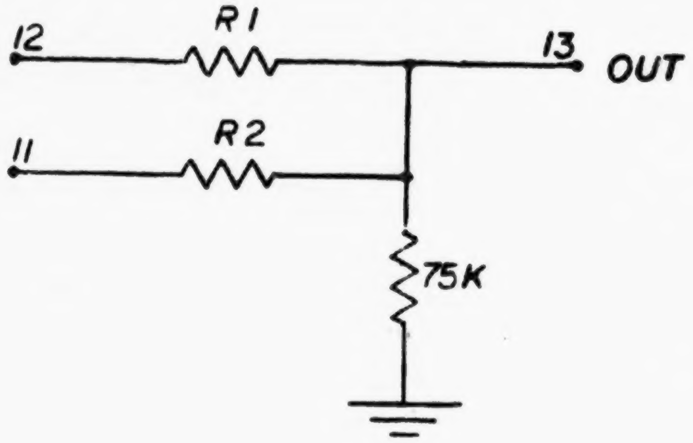

16
17
6.8K
6.8K
6.8K
6.8K
13
18
MONO
.7sec
20µf
12
SAWTOOTH
GEN.
OSC
MONO
.7sec
20µf
15
2
3
WRONG
4

DETAIL FROM
ASCP TEACHING MACHINE

BOARD NO. 1


15
IN
MIKE AMP
14
OUT

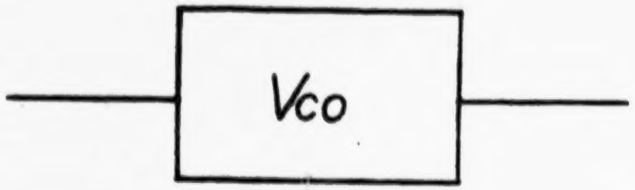
NOTE: -18V ON PIN NO. 2


12
R1
13
OUT
11
R2
75K

R1 AND R2 ARE ADJUSTED

FOR RIGHT AND WRONG

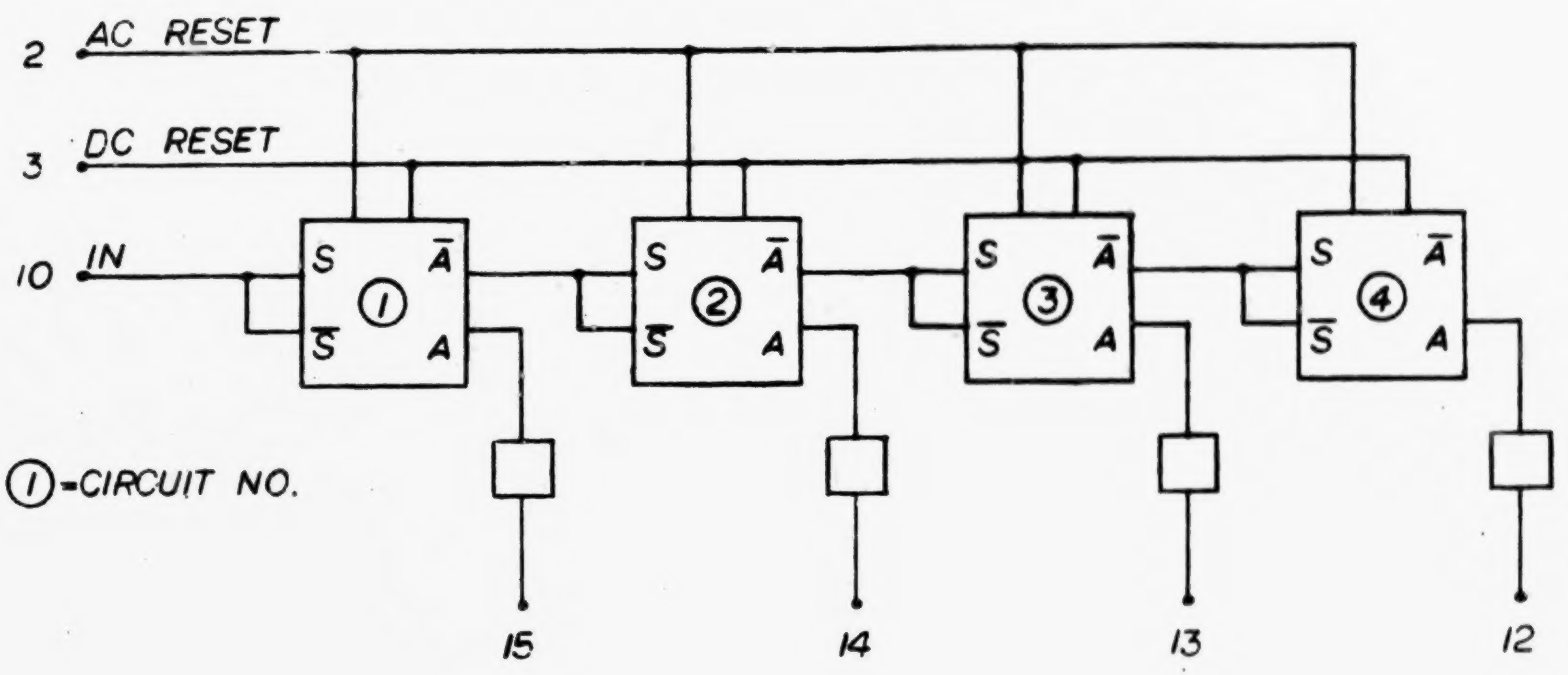
TONE VOLUME.



ALL INPUT AND OUTPUT CONNECTIONS
ARE DIFFERENT DUE TO CHANGES IN
THE INSTRUMENTATION SYSTEM.

DETAIL FROM
ASCS TEACHING MACHINE

BOARD NO. 2

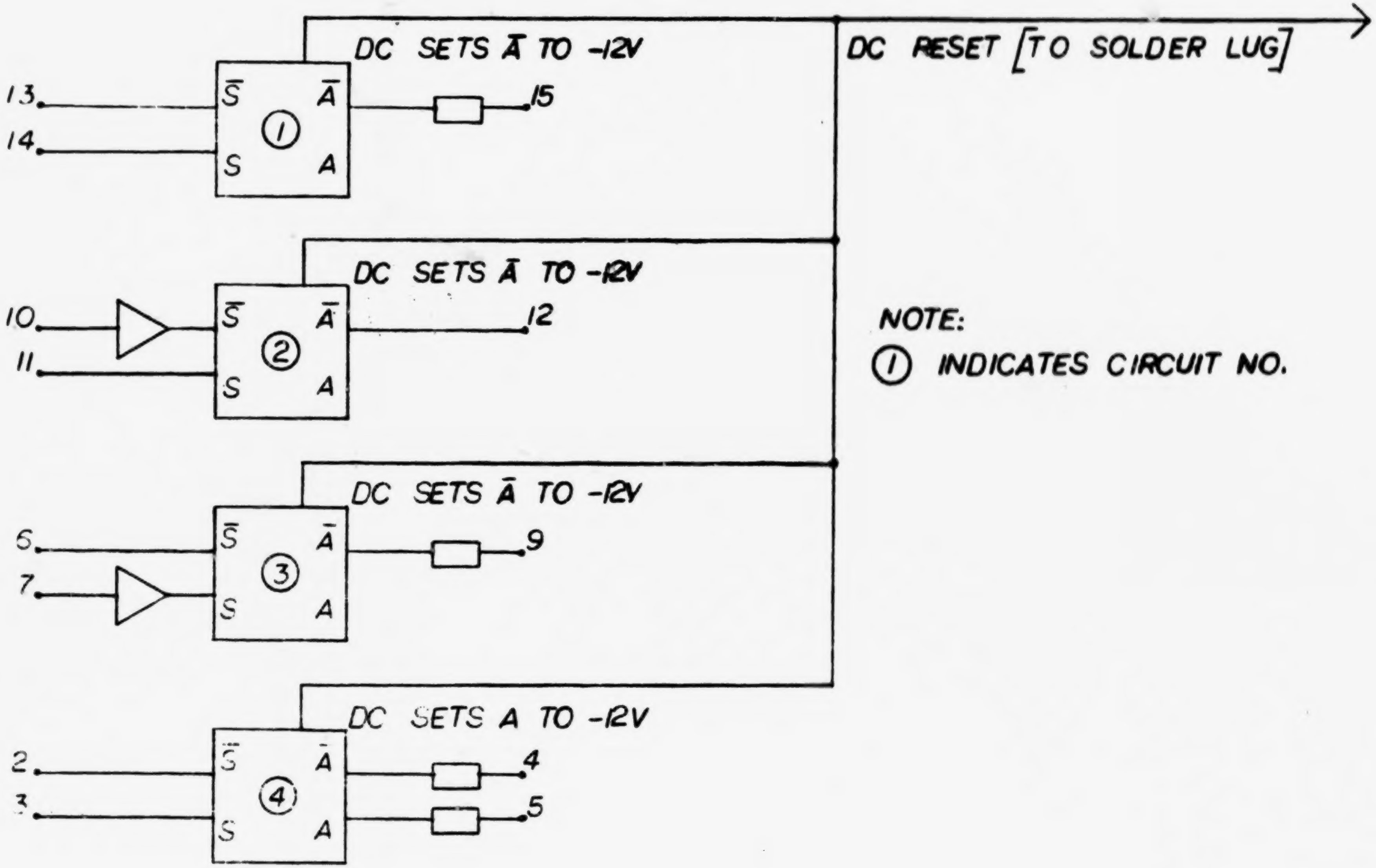

2 AC RESET
3 DC RESET
10 IN
S
$\bar{S}$
$\bar{A}$
A
①
②
③
④
15
14
13
12
①-CIRCUIT NO.

BOTH THE AC AND DC RESET SET THE $\bar{A}$ SIDE OF ALL FLIP-FLOP CIRCUITS TO -12V THROUGH A DC LEVEL CHANGE OF C → -12V.

ALSO NOTE THE EXTERNAL CONNECTION [SOLDER LUG] TIES TO THE DC SET LINE. THIS IS USED FOR CONNECTION TO BOARD 3 DC SET LINE THROUGH EXTERNAL CONNECTION [SOLDER LUG].

DETAIL FROM
ASCS TEACHING MACHINE

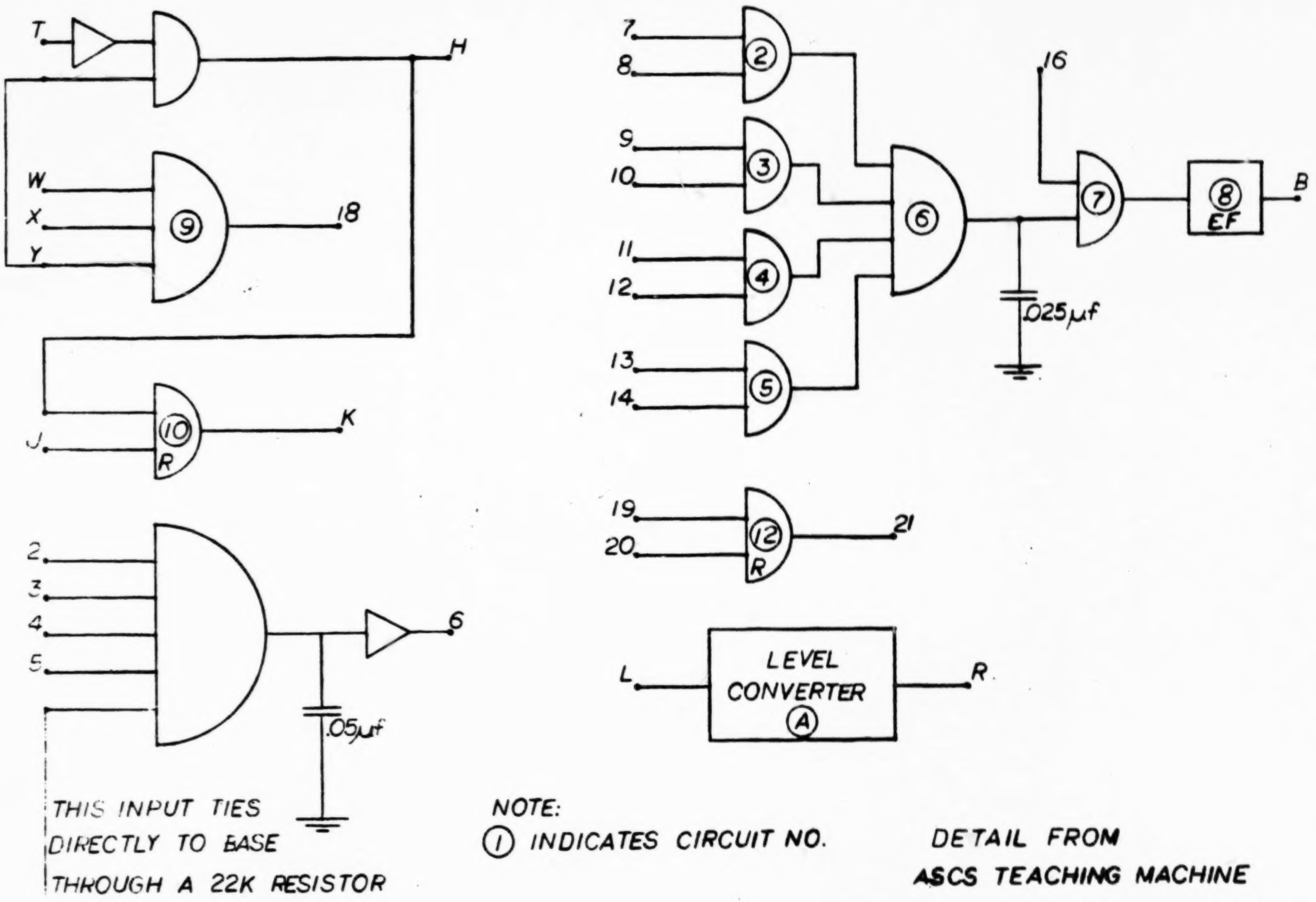
BOARD NO. 3


DC SETS $\bar{A}$ TO -12V
13
14
$\bar{S}$
S
①
$\bar{A}$
A
15
DC SETS $\bar{A}$ TO -12V
10
11
②
12
DC SETS $\bar{A}$ TO -12V
6
7
③
9
DC SETS A TO -12V
2
3
④
4
5
DC RESET [TO SOLDER LUG]

NOTE:
① INDICATES CIRCUIT NO.

DETAIL FROM
ASCS TEACHING MACHINE

BOARD NO.4

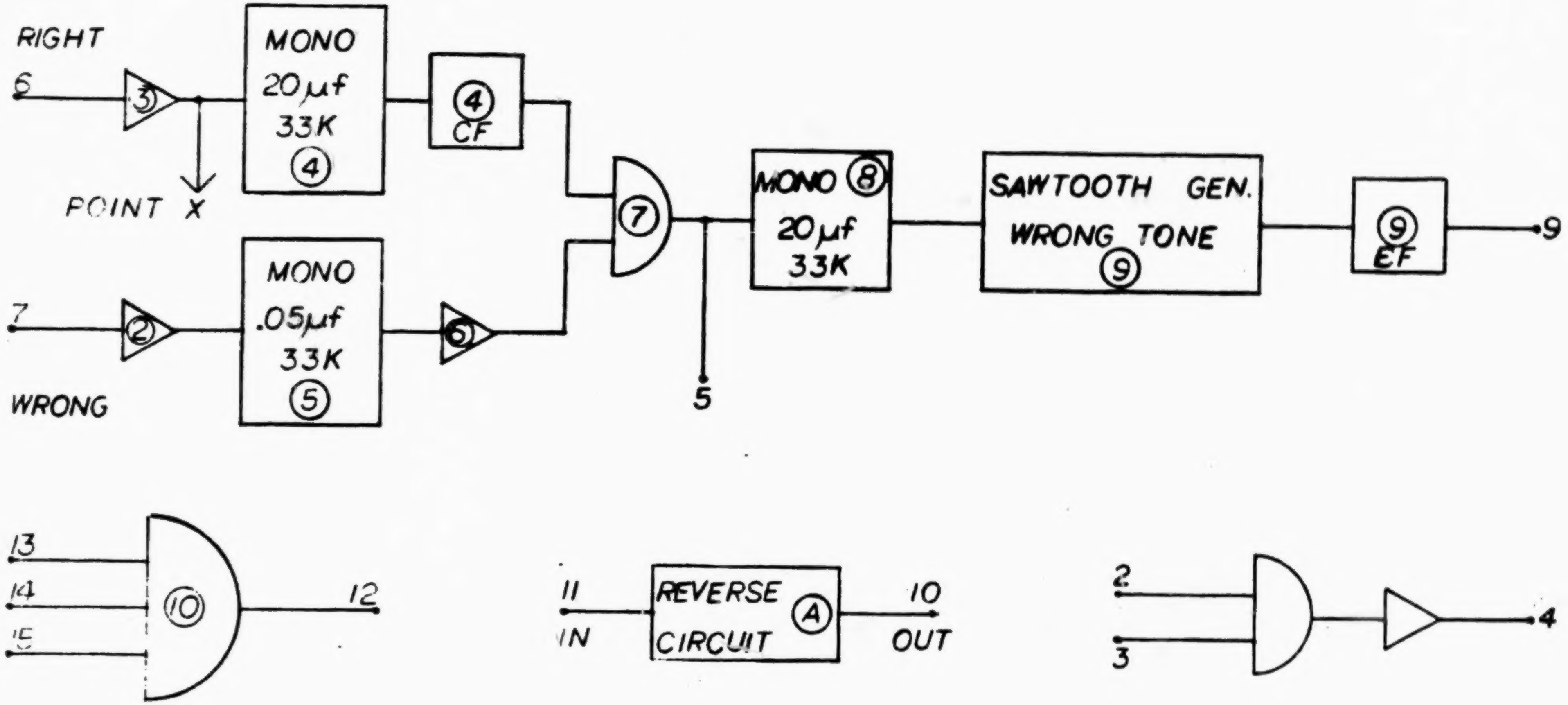

T
H
W
X
Y
9
18
J
10
R
K
2
3
4
5
.05μf
6
7
8
2
9
10
3
11
12
4
13
14
5
6
.025μf
16
7
8
EF
B
19
20
12
R
21
L
LEVEL
CONVERTER
A
R

THIS INPUT TIES
DIRECTLY TO BASE
THROUGH A 22K RESISTOR

NOTE:
① INDICATES CIRCUIT NO.

DETAIL FROM
ASCS TEACHING MACHINE

BOARD NO. 5

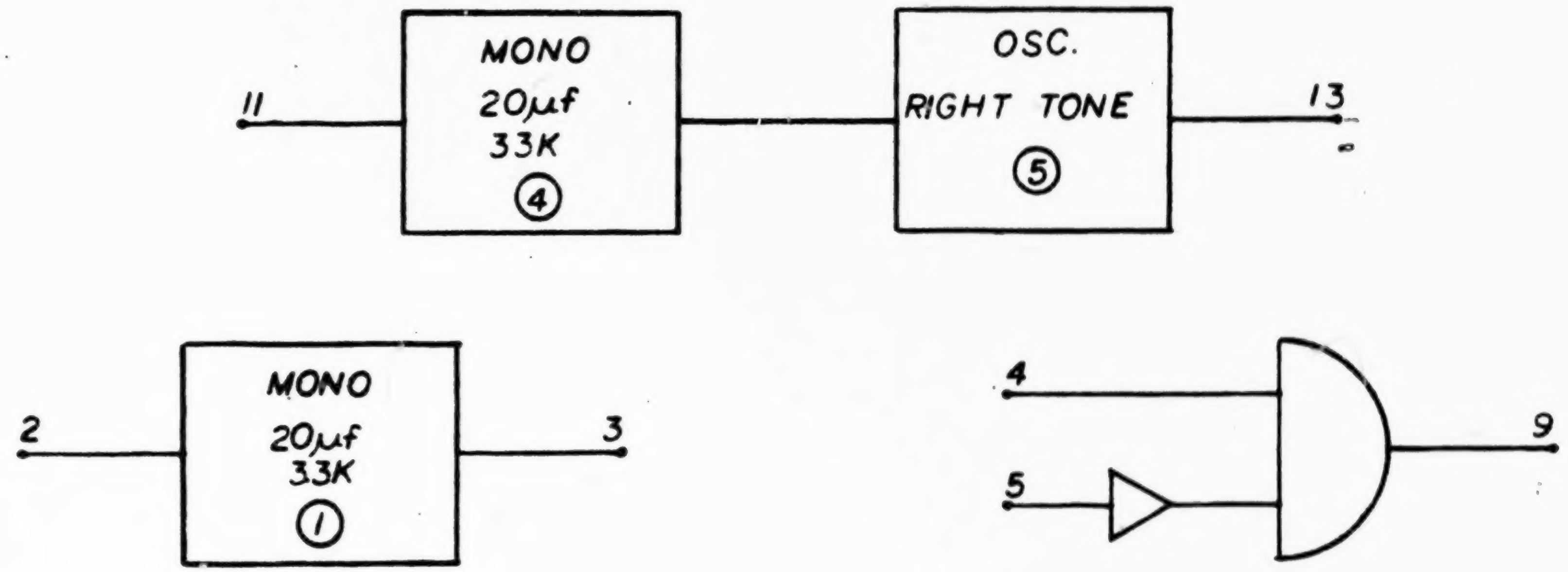

RIGHT
6
③
POINT X
MONO
20µf
33K
④
④
CF
7
②
WRONG
MONO
.05µf
33K
⑤
⑥
⑦
5
MONO ⑧
20µf
33K
SAWTOOTH GEN.
WRONG TONE
⑨
⑨
EF
9
13
14
15
⑩
12
11
IN
REVERSE
CIRCUIT
Ⓐ
10
OUT
2
3
4

NOTE:

① INDICATES CIRCUIT NO.

DETAIL FROM
ASCS TEACHING MACHINE

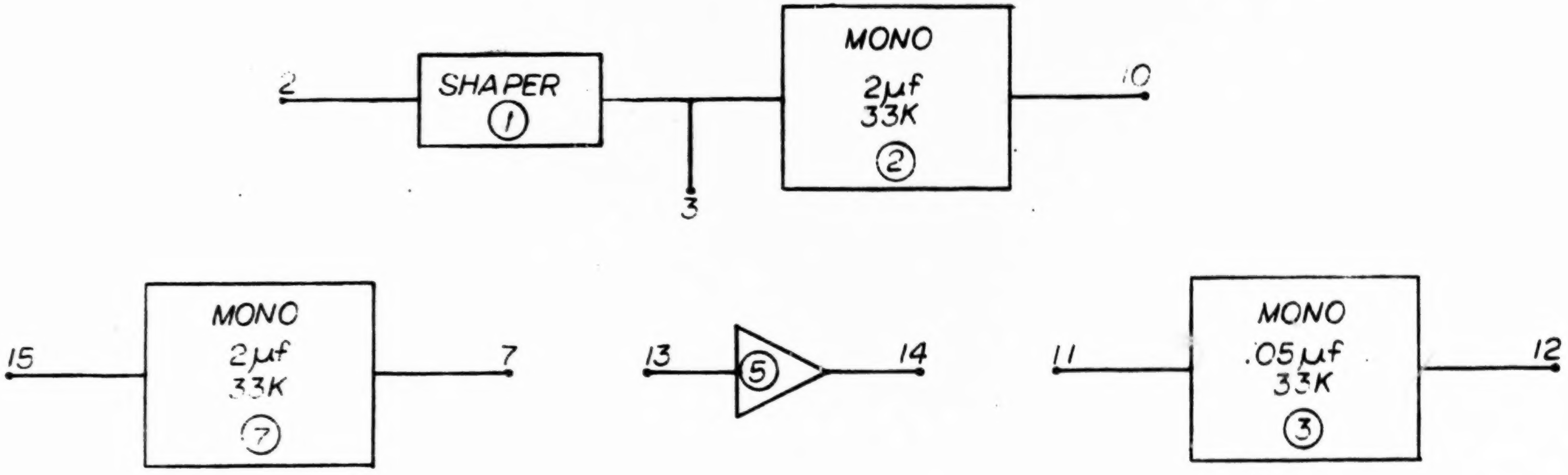
BOARD NO. 6


MONO
20µf
33K
④
OSC.
RIGHT TONE
⑤
11
13
MONO
20µf
33K
①
2
3
4
5
9

NOTE:
① INDICATES CIRCUIT NO.

DETAIL FROM
ASCS TEACHING MACHINE

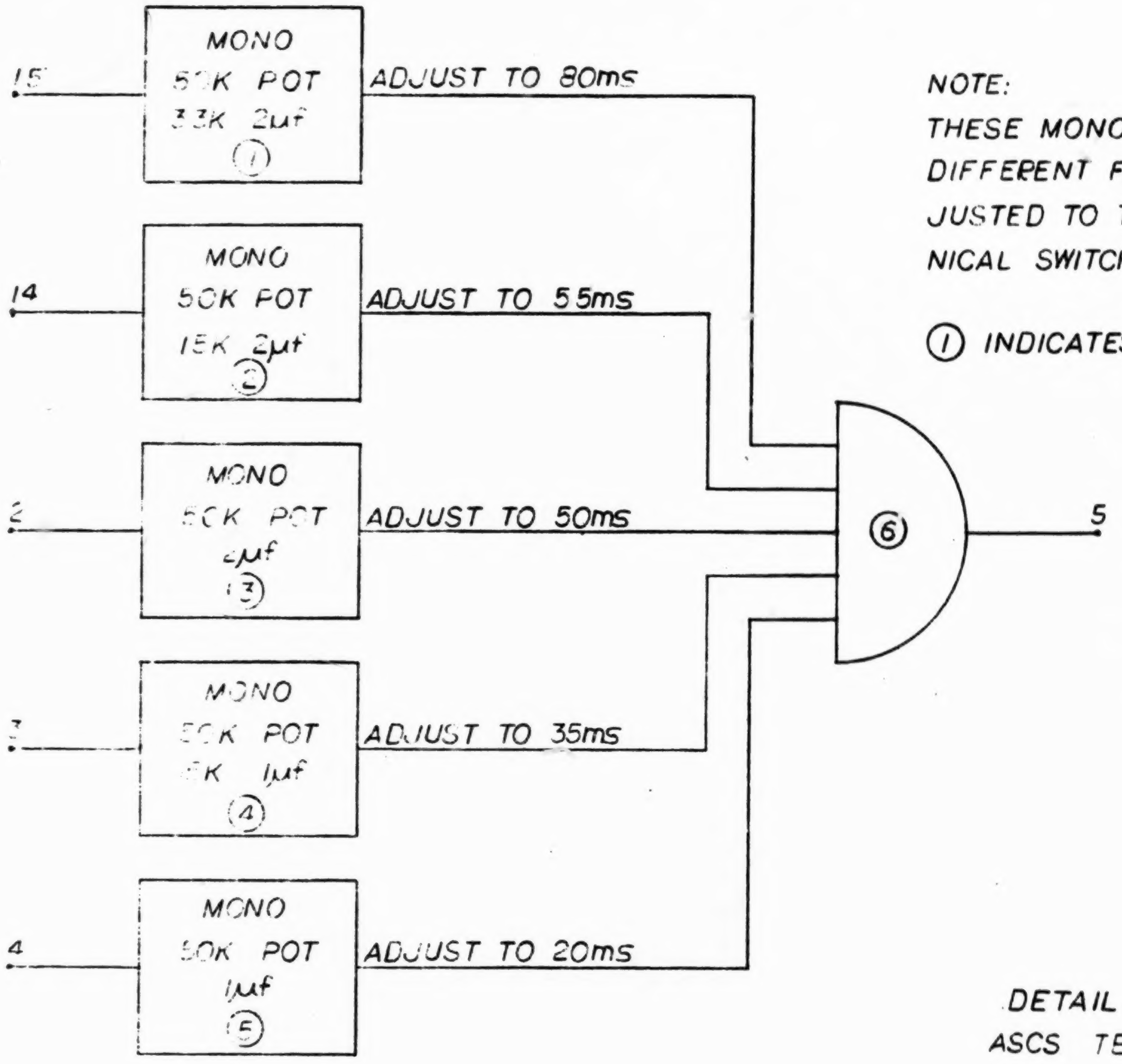
BOARD NO.7


2
SHAPER
①
3
MONO
2µf
33K
②
10
15
MONO
2µf
33K
⑦
7
13
⑤
14
11
MONO
.05µf
33K
③
12

NOTE:
○ INDICATES CIRCUIT NO.

DETAIL FROM
ASCS TEACHING MACHINE

BOARD NO. 8

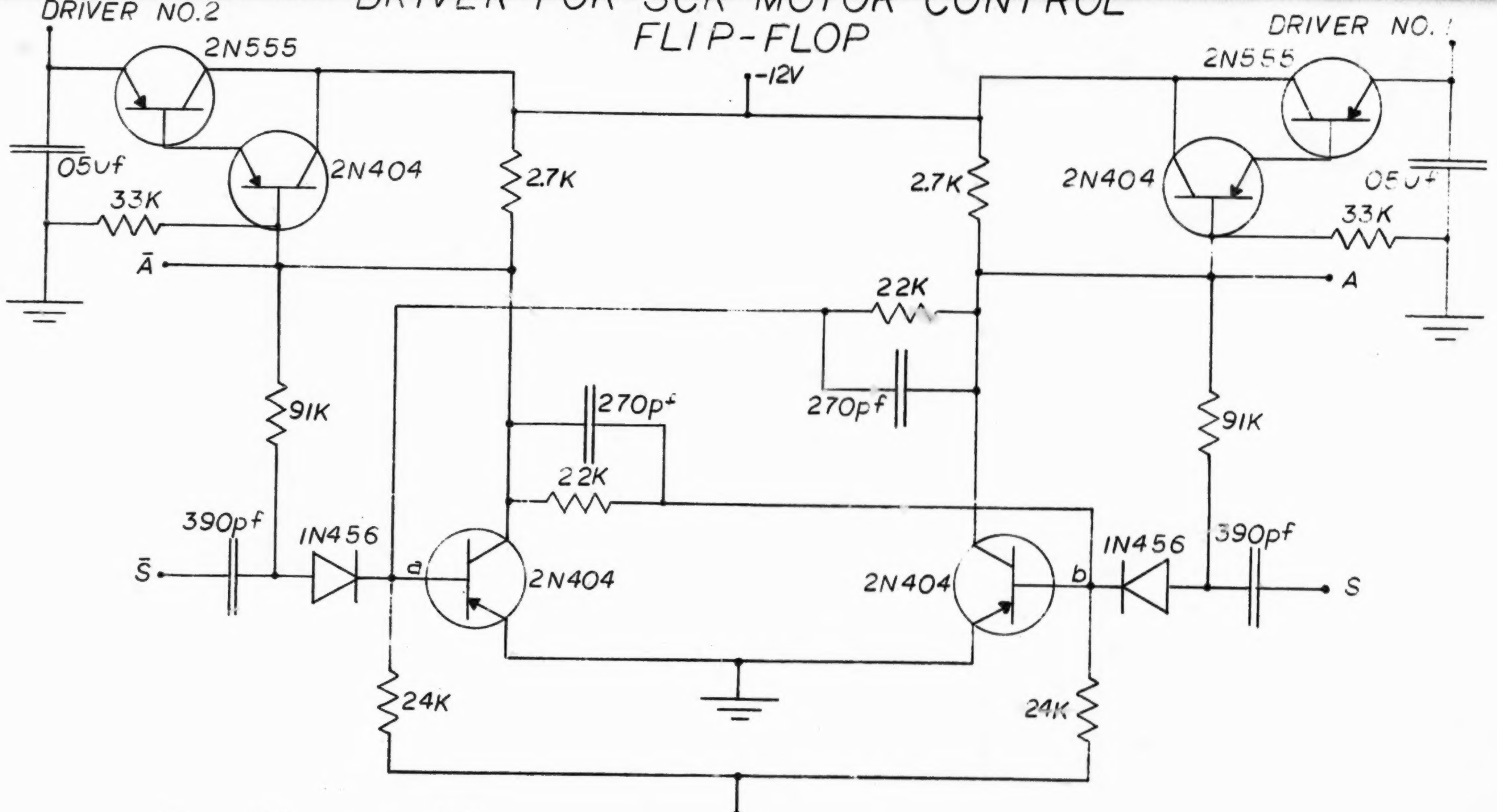

15
MONO
50K POT
33K 2µf
①
ADJUST TO 80ms
14
MONO
50K POT
15K 2µf
②
ADJUST TO 55ms
2
MONO
50K POT
2µf
③
ADJUST TO 50ms
3
MONO
50K POT
5K 1µf
④
ADJUST TO 35ms
4
MONO
50K POT
1µf
⑤
ADJUST TO 20ms
⑥
5

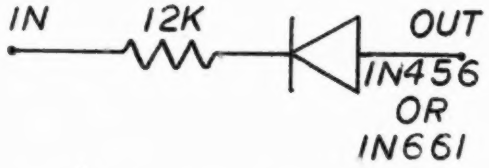
NOTE:
THESE MONO INPUT CIRCUITS ARE DIFFERENT FROM STANDART [ADJUSTED TO TRIGGER FROM MECHANICAL SWITCH].

① INDICATES CIRCUIT NO.

DETAIL FROM
ASCS TEACHING MACHINE

DRIVER FOR SCR MOTOR CONTROL
FLIP-FLOP


DRIVER NO.2
2N555
2N404
05uf
33K
$\bar{A}$
91K
390pf
$\bar{S}$
1N456
a
2N404
24K
2.7K
270pf
22K
-12V
22K
270pf
2.7K
2N404
b
1N456
390pf
S
24K
+6V
DRIVER NO.1
2N555
2N404
05uf
33K
A
91K


IN
12K
OUT
1N456
OR
1N661

NOTE:

POS. GOING EDGE IN $\bar{S}$ SETS $\bar{A}$ TO -12V

POS GOING EDGE IN S SETS A TO -12V

EITHER AC OR DC RESET

CONNECTS AT a TO SET A TO -12V

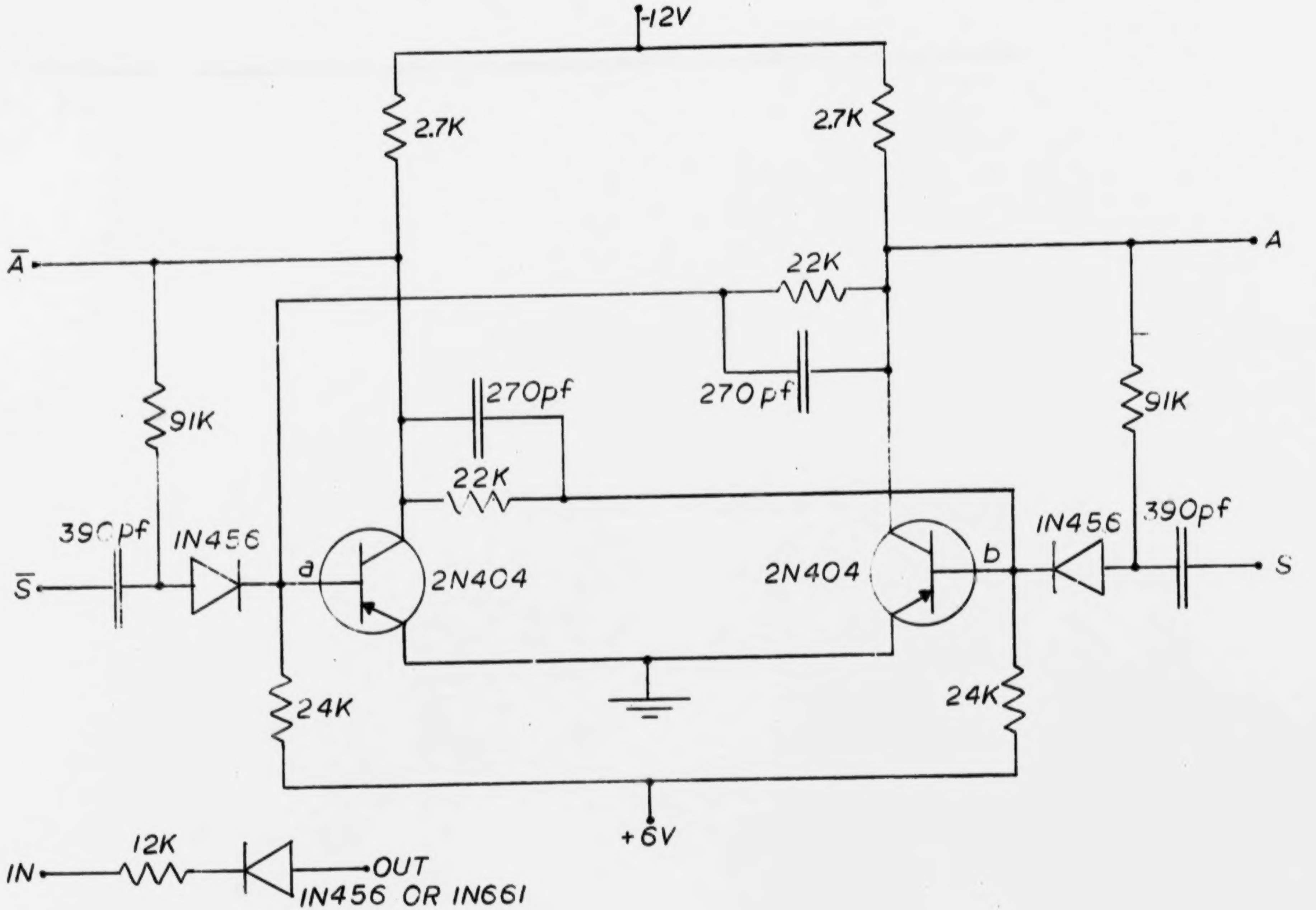
CONNECTS AT b TO SET $\bar{A}$ TO -12V

SEE BOARD NO.2

DETAIL FROM

ASCS TEACHING MACHINE

FLIP-FLOP


-12V
2.7K
2.7K
$\overline{A}$
A
22K
270pf
270pf
91K
91K
22K
390pf
IN456
a
2N404
2N404
b
IN456
390pf
$\overline{S}$
S
24K
24K
+6V
IN
12K
OUT
IN456 OR IN661

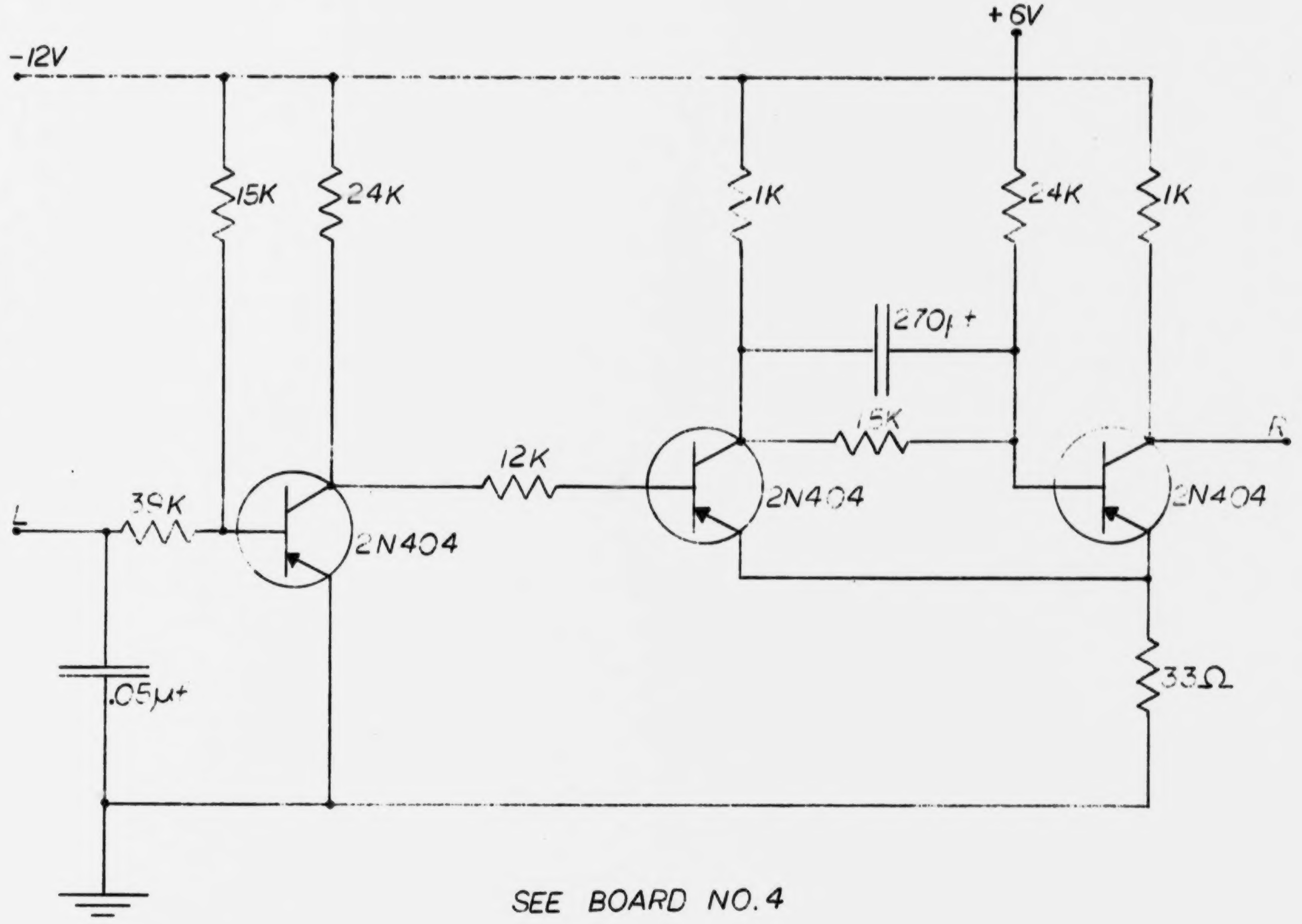
EITHER AC OR DC RESET
CONNECTS AT a TO SET A TO -12V
CONNECTS AT b TO SET $\overline{A}$ TO -12V

POS GOING EDGE IN $\overline{S}$ SETS $\overline{A}$ TO -12V
POS GOING EDGE IN S SETS A TO -12V

SEE BOARD NO.2

DETAIL FROM
ASCS TEACHING MACHINE

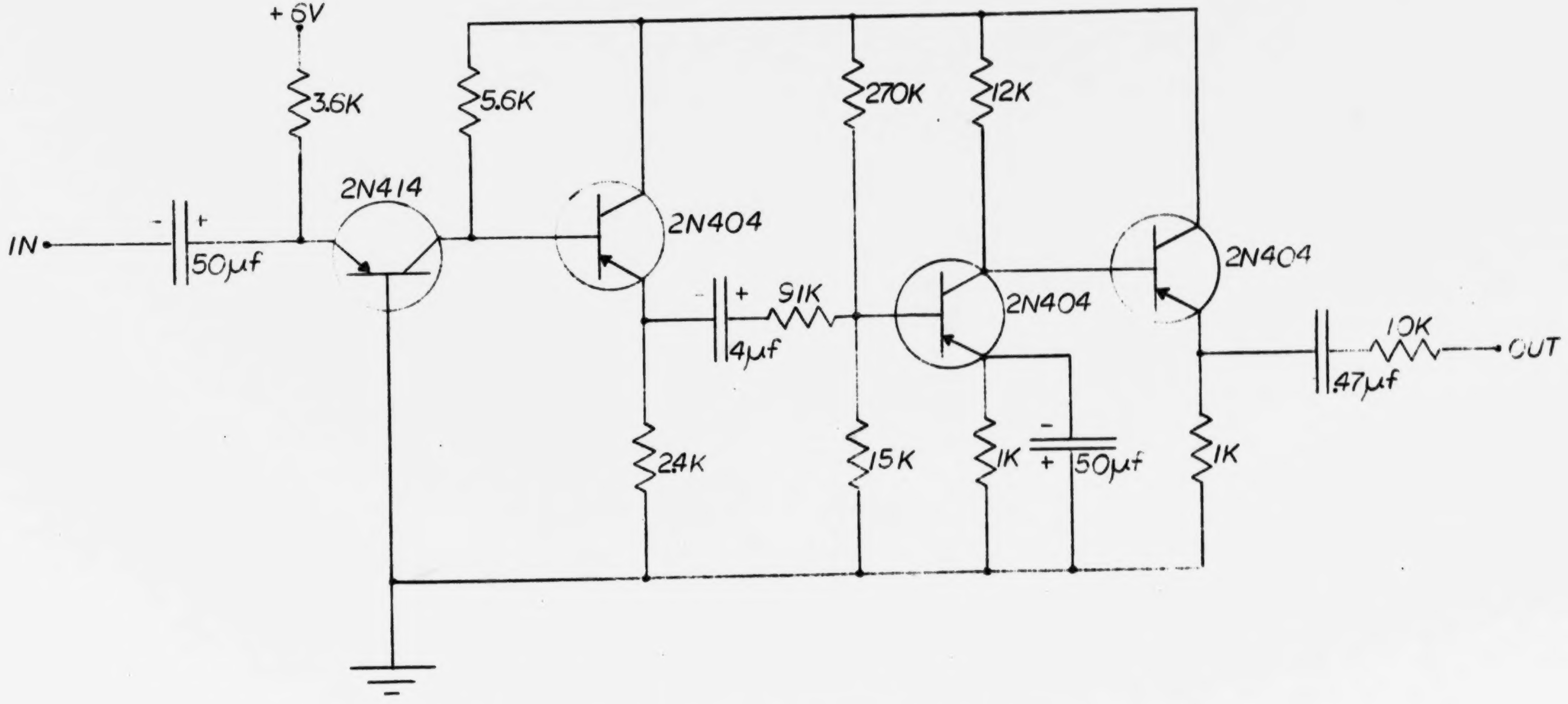
LEVEL CONVERTER


+6V
-12V
15K
24K
1K
24K
1K
270p+
15K
12K
39K
L
R
2N404
2N404
2N404
.05μ+
33Ω

SEE BOARD NO. 4

DETAIL FROM
ASCS TEACHING MACHINE

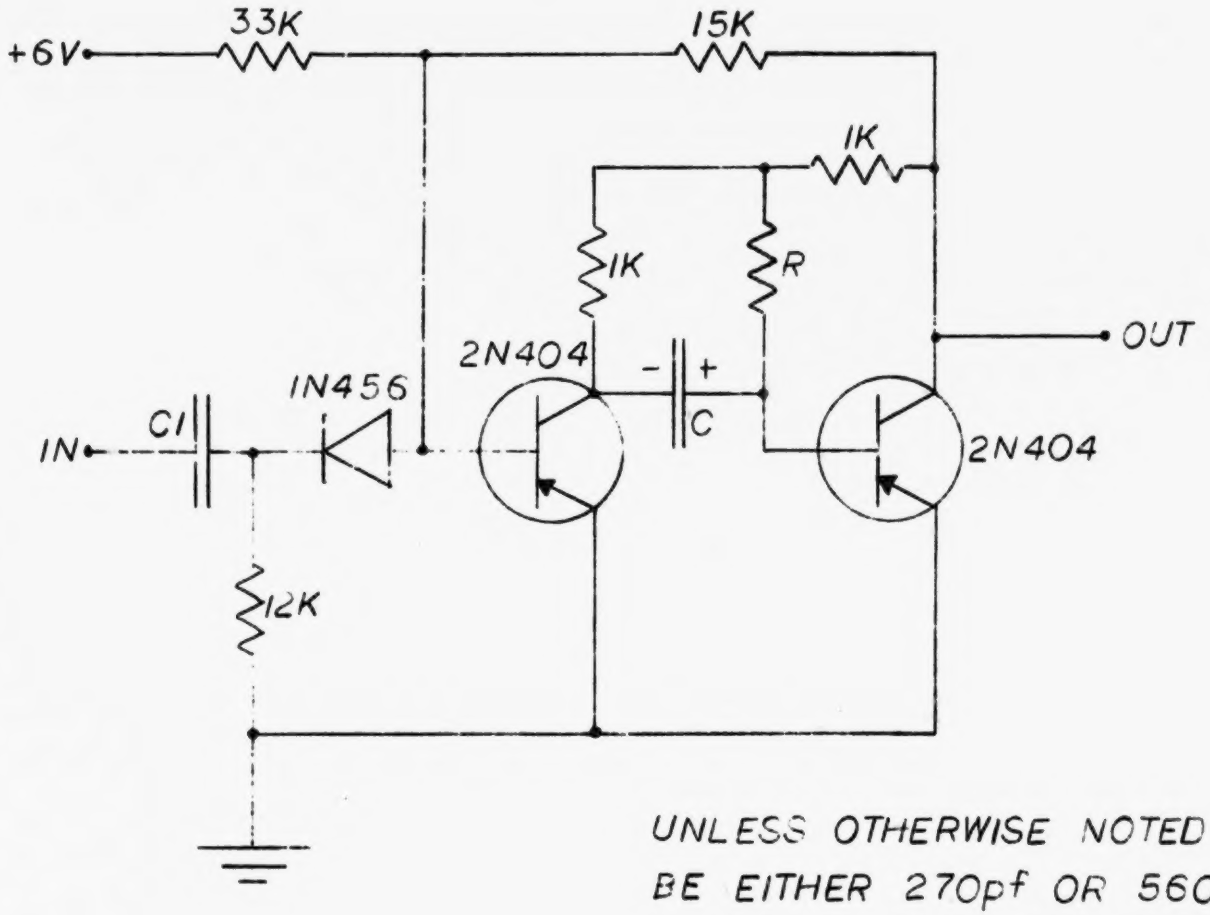
MICROPHONE AMPLIFIER

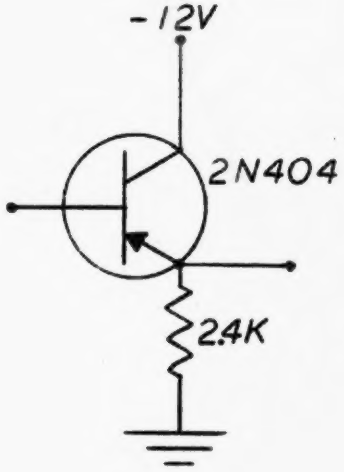

+6V
3.6K
5.6K
270K
12K
2N414
2N404
2N404
2N404
IN
- +
50µf
- +
91K
4µf
10K
OUT
.47µf
24K
15K
1K
-
+
50µf
1K

SEE BOARD NO. 1

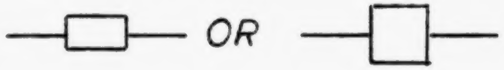
DETAIL FROM
ASCS TEACHING MACHINE

MONO


33K
15K
+6V
1K
1K
R
OUT
2N404
1N456
C1
IN
-
+
C
2N404
12K


-12V
2N404
2.4K

THIS EMITTER FOLLOWER
IS REPRESENTED IN ALL
OTHER DIAGRAMS AS



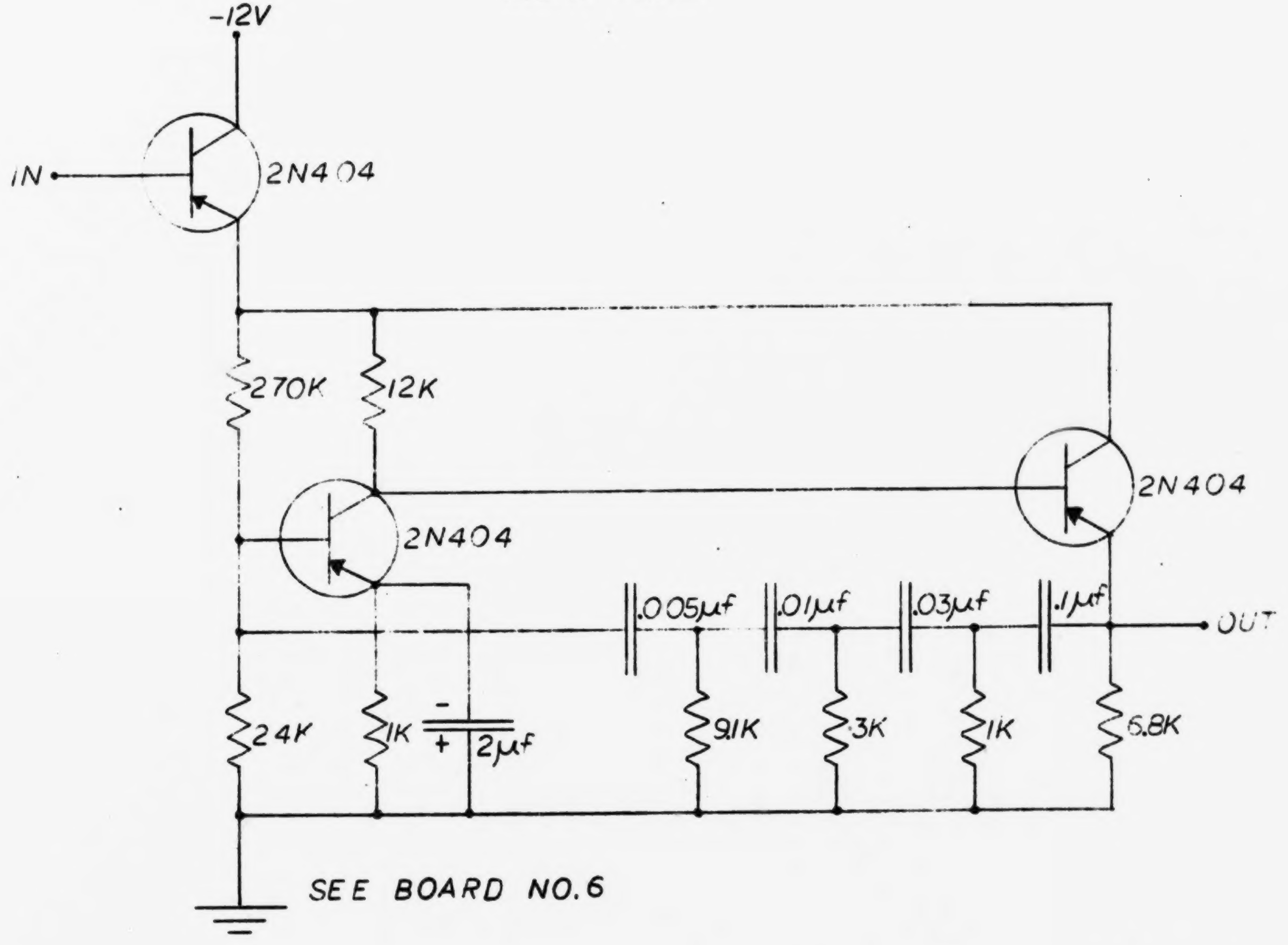
UNLESS OTHERWISE NOTED C1 WILL
BE EITHER 270pf OR 560pf.
R AND C ARE SHOWN IN EACH BOX
REPRESENTING THIS MONO.

SEE BOARDS NOS. 5-8

DETAIL FROM
ASCS TEACHING MACHINE

OSCILLATOR

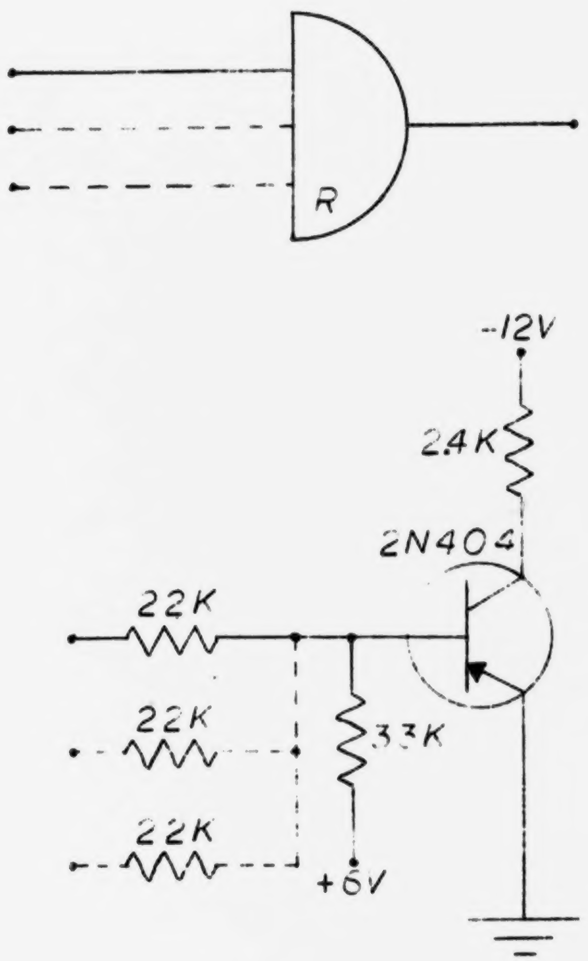
RIGHT TONE


-12V
IN
2N404
270K
12K
2N404
2N404
.005μf
.01μf
.03μf
.1μf
OUT
24K
1K
-
+
2μf
9.1K
3K
1K
6.8K

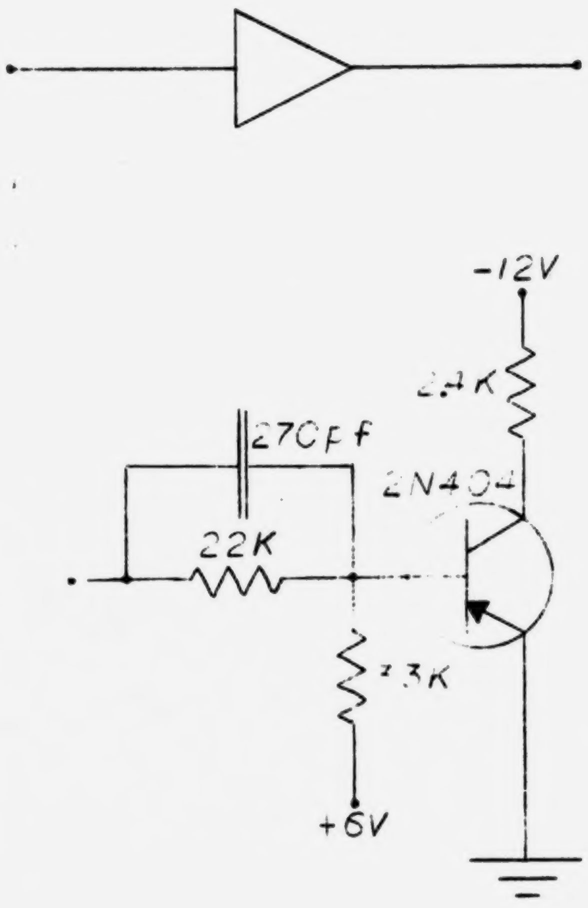
SEE BOARD NO.6

DETAIL FROM
ASCS TEACHING MACHINE

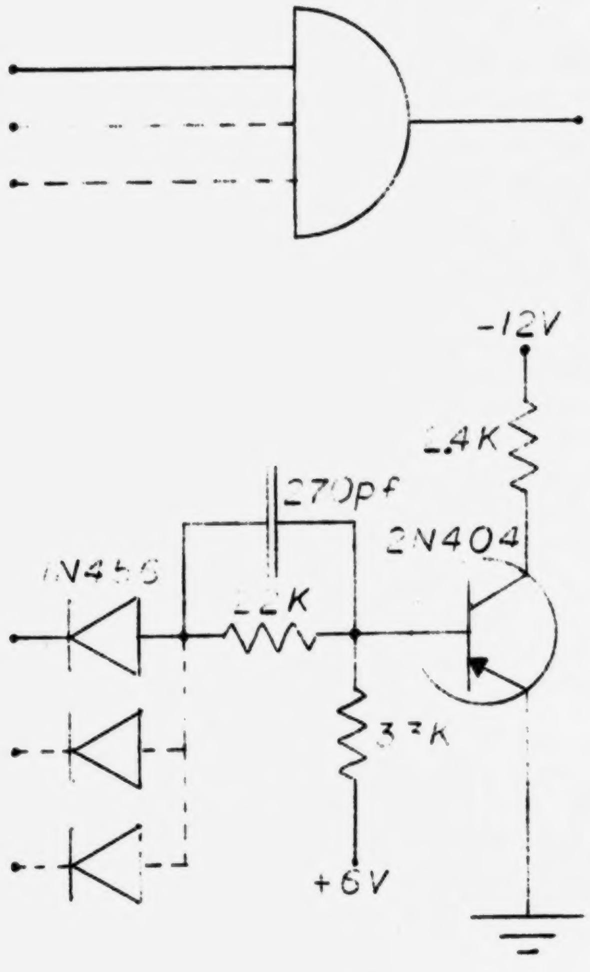
RESISTOR GATE


R
-12V
2.4K
2N404
22K
22K
22K
33K
+6V

INVERTER

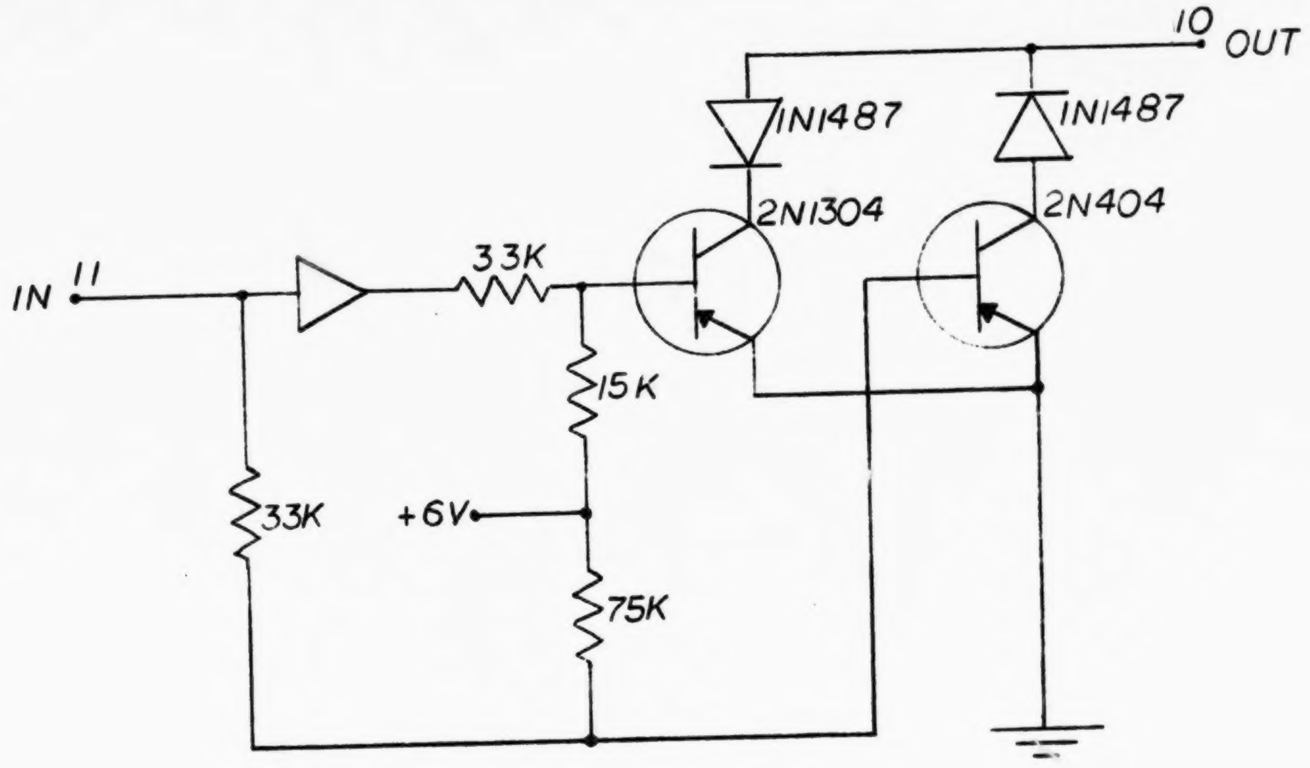

-12V
2.4K
270pf
2N404
22K
33K
+6V

DIODE GATE


-12V
2.4K
270pf
2N404
1N456
22K
33K
+6V

DETAIL FROM
ASCS TEACHING MACHINE

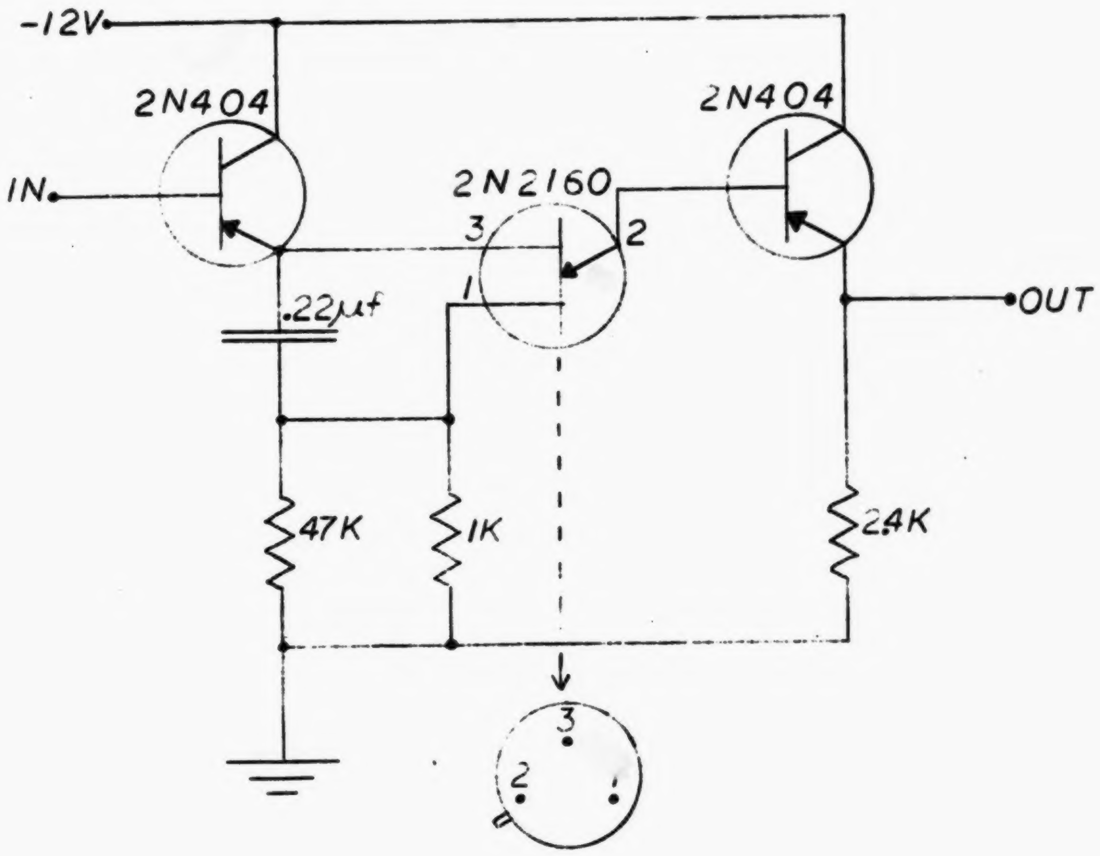
REVERSE CIRCUIT


10 OUT
IN 11
1N1487
1N1487
2N1304
2N404
33K
15K
33K
+6V
75K

SEE BOARD NO.5

DETAIL FROM
ASCS TEACHING MACHINE

SAWTOOTH GENERATOR

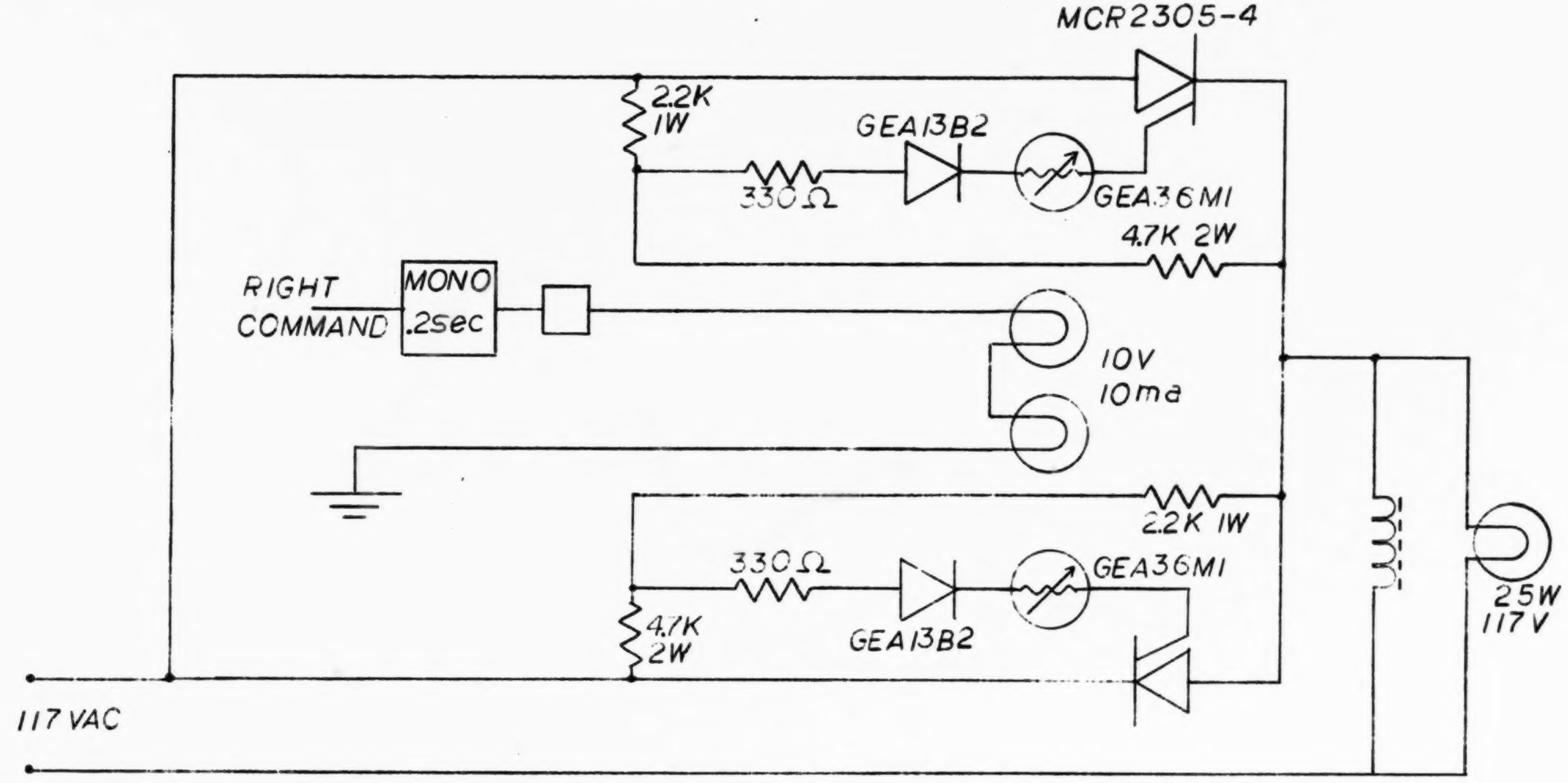

-12V
IN
2N404
2N2160
3
2
1
2N404
OUT
.22µf
47K
1K
2.4K
3
2
1

SEE BOARD NO. 5

DETAIL FROM
ASCS TEACHING MACHINE

SCR DRIVE CIRCUIT

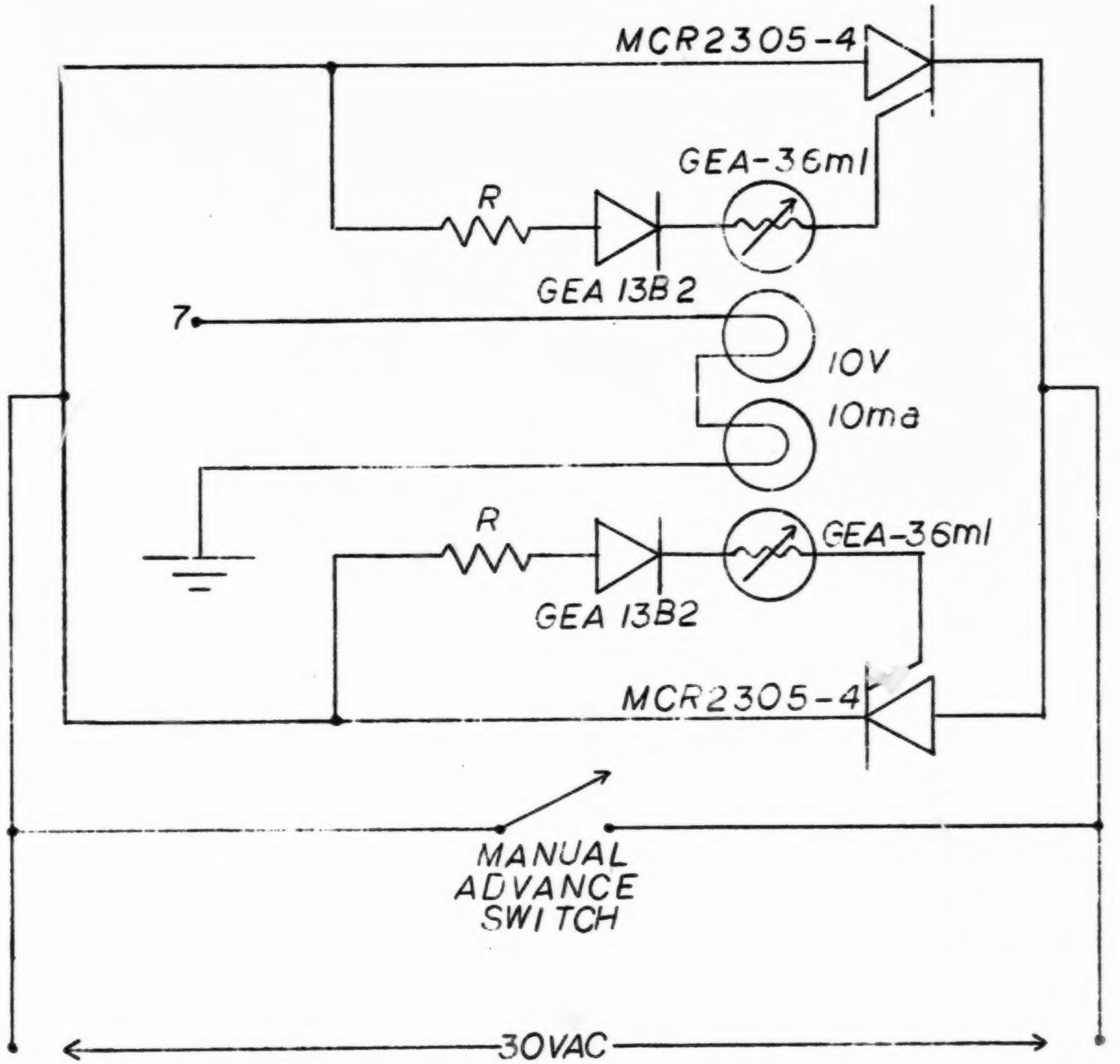
M+M FEEDER


MCR2305-4
2.2K
1W
GEA13B2
330Ω
GEA36MI
4.7K 2W
RIGHT
COMMAND
MONO
.2sec
10V
10ma
2.2K 1W
330Ω
GEA36MI
GEA13B2
4.7K
2W
25W
117V
117VAC

DETAIL FROM
ASCS TEACHING MACHINE

SCR DRIVE CIRCUIT

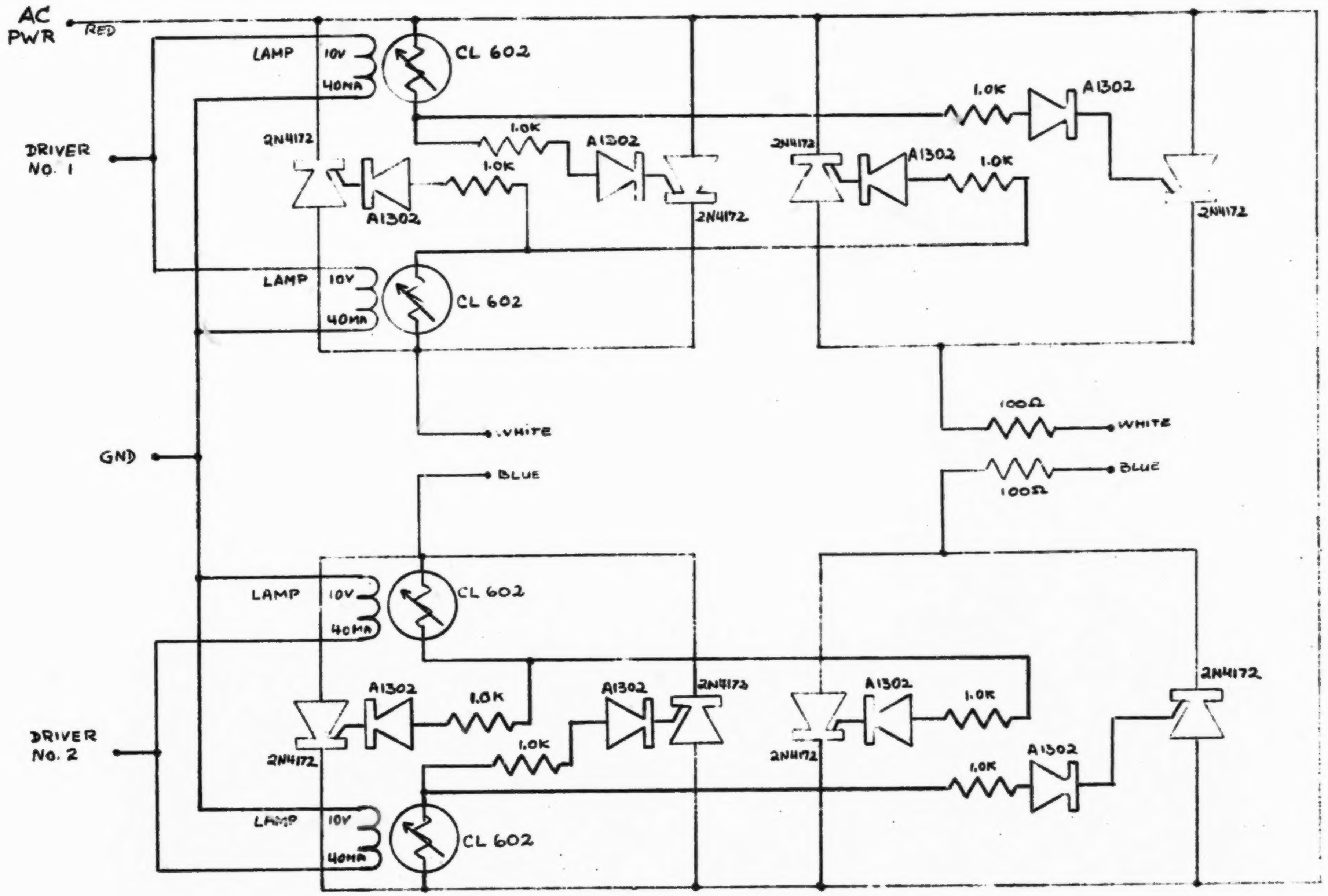
SLIDE PROJECTOR


MCR2305-4
R
GEA-36ml
GEA 13B2
7
10V
10ma
R
GEA-36ml
GEA 13B2
MCR2305-4
MANUAL
ADVANCE
SWITCH
30VAC

R IS ADJUSTED FOR DRIVE REQUIREMENT OF THE SCR.

DETAIL FROM
ASCS TEACHING MACHINE

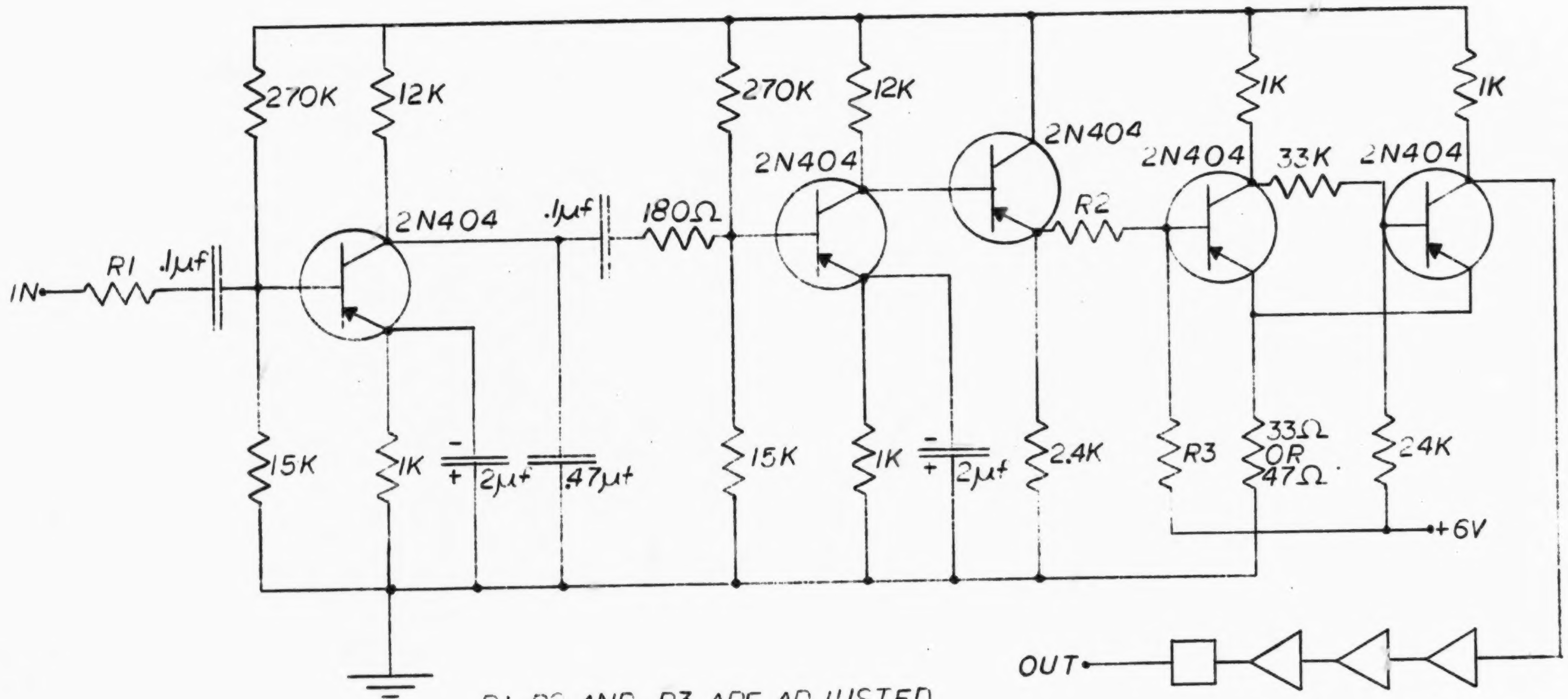
SCR MOTOR CONTROL CIRCUIT


AC PWR
RED
LAMP
10V
40MA
CL 602
DRIVER NO. 1
2N4172
A1302
1.0K
1.0K
A1302
2N4172
2N4172
A1302
1.0K
1.0K
A1302
2N4172
LAMP
10V
40MA
CL 602
WHITE
GND
BLUE
100Ω
WHITE
100Ω
BLUE
LAMP
10V
40MA
CL 602
DRIVER NO. 2
A1302
1.0K
2N4172
1.0K
A1302
2N4172
2N4172
A1302
1.0K
1.0K
A1302
2N4172
LAMP
10V
40MA
CL 602

DETAIL FROM

ASCS TEACHING MACHINE

SHAPER

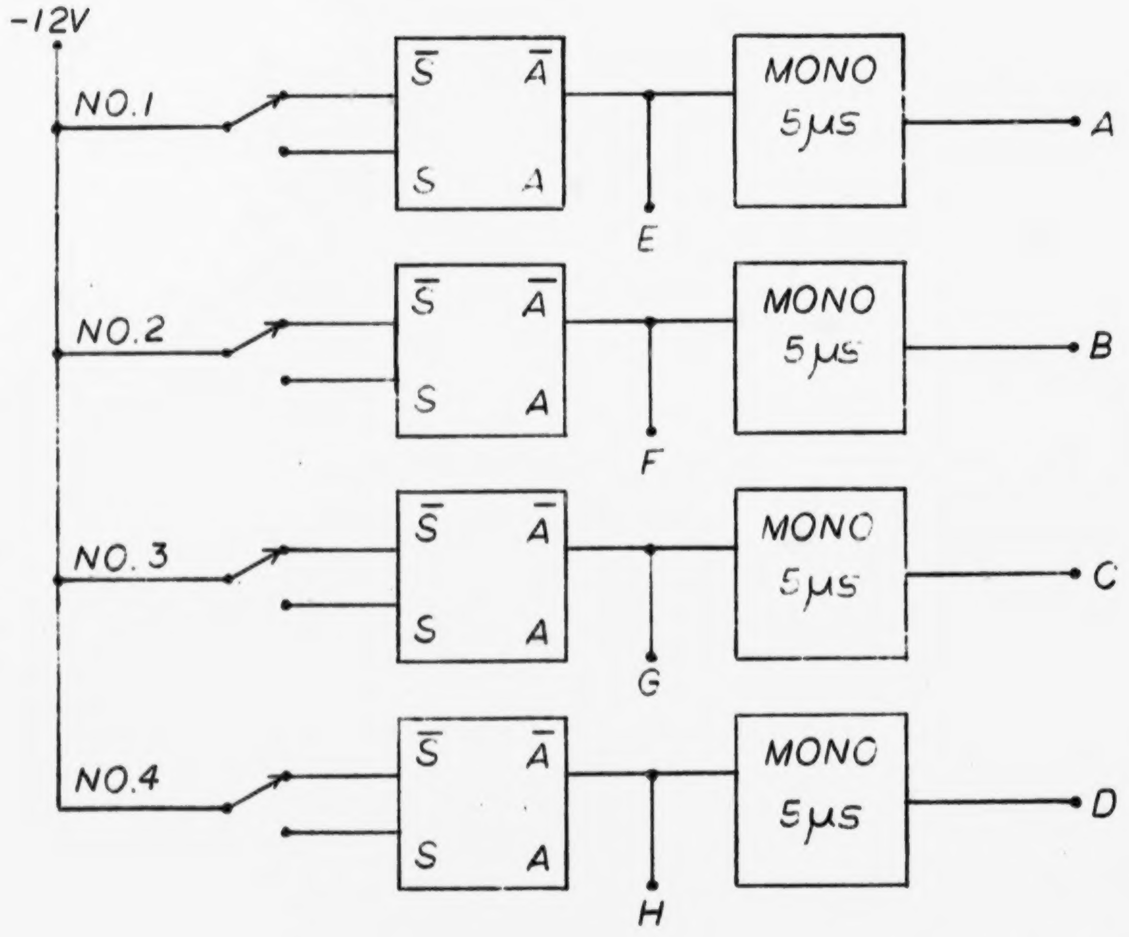

IN
R1
.1μf
270K
12K
15K
1K
2N404
2μf
.47μf
.1μf
180Ω
270K
12K
2N404
15K
1K
2μf
2N404
R2
2.4K
2N404
1K
33K
2N404
1K
R3
33Ω
OR
47Ω
24K
+6V
OUT

RI R2 AND R3 ARE ADJUSTED
FOR INPUT SENSITIVITY OF
INDIVIDUAL UNITS.

SEE BOARD NO. 7

DETAIL FROM
ASCS TEACHING MACHINE

SWITCH CIRCUITS


-12V
NO.1
NO.2
NO.3
NO.4
$\overline{S}$
$\overline{A}$
S
A
MONO
5μs
A
B
C
D
E
F
G
H

NOTES:

ALL FLIP-FLOPS ARE DC SET.

$-12 \longrightarrow \overline{S} \longrightarrow \overline{A} \longrightarrow 0$

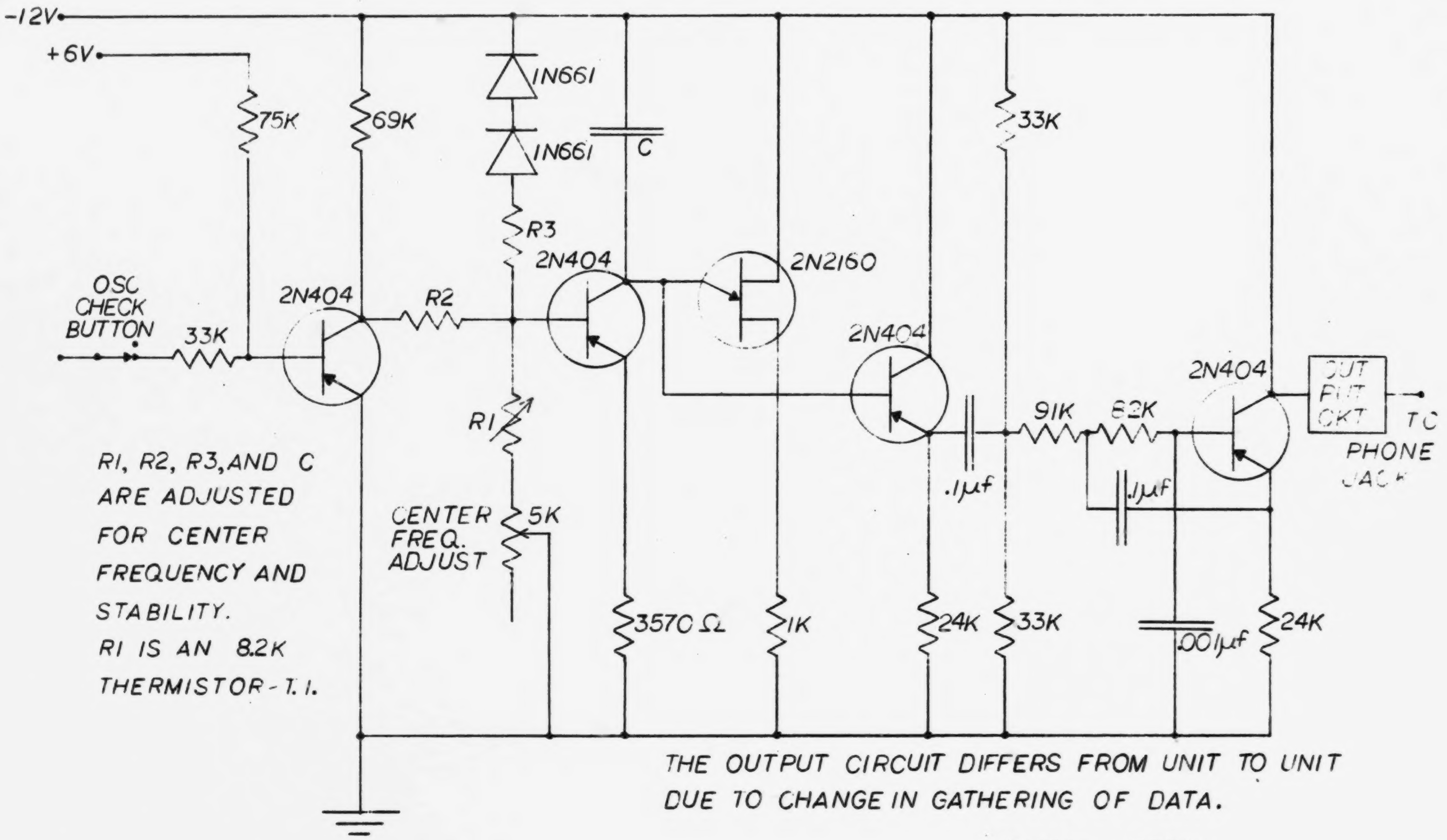
$-12 \longrightarrow S \text{ --- } A \longrightarrow 0$

OUTPUTS OF MONOS ARE NORMALLY TAKEN OFF THE TRANSISTOR.

THESE CIRCUITS ARE MOUNTED ON THE SWITCH ITSELF.

DETAIL FROM
ASCS TEACHING MACHINE

VCO


-12V
+6V
75K
69K
1N661
1N661
C
33K
R3
2N404
2N2160
OSC CHECK BUTTON
33K
2N404
R2
2N404
R1
CENTER FREQ. ADJUST
5K
3570 Ω
1K
24K
33K
.1µf
91K
82K
.1µf
.001µf
24K
2N404
OUT PUT CKT
TO PHONE JACK

R1, R2, R3, AND C ARE ADJUSTED FOR CENTER FREQUENCY AND STABILITY.

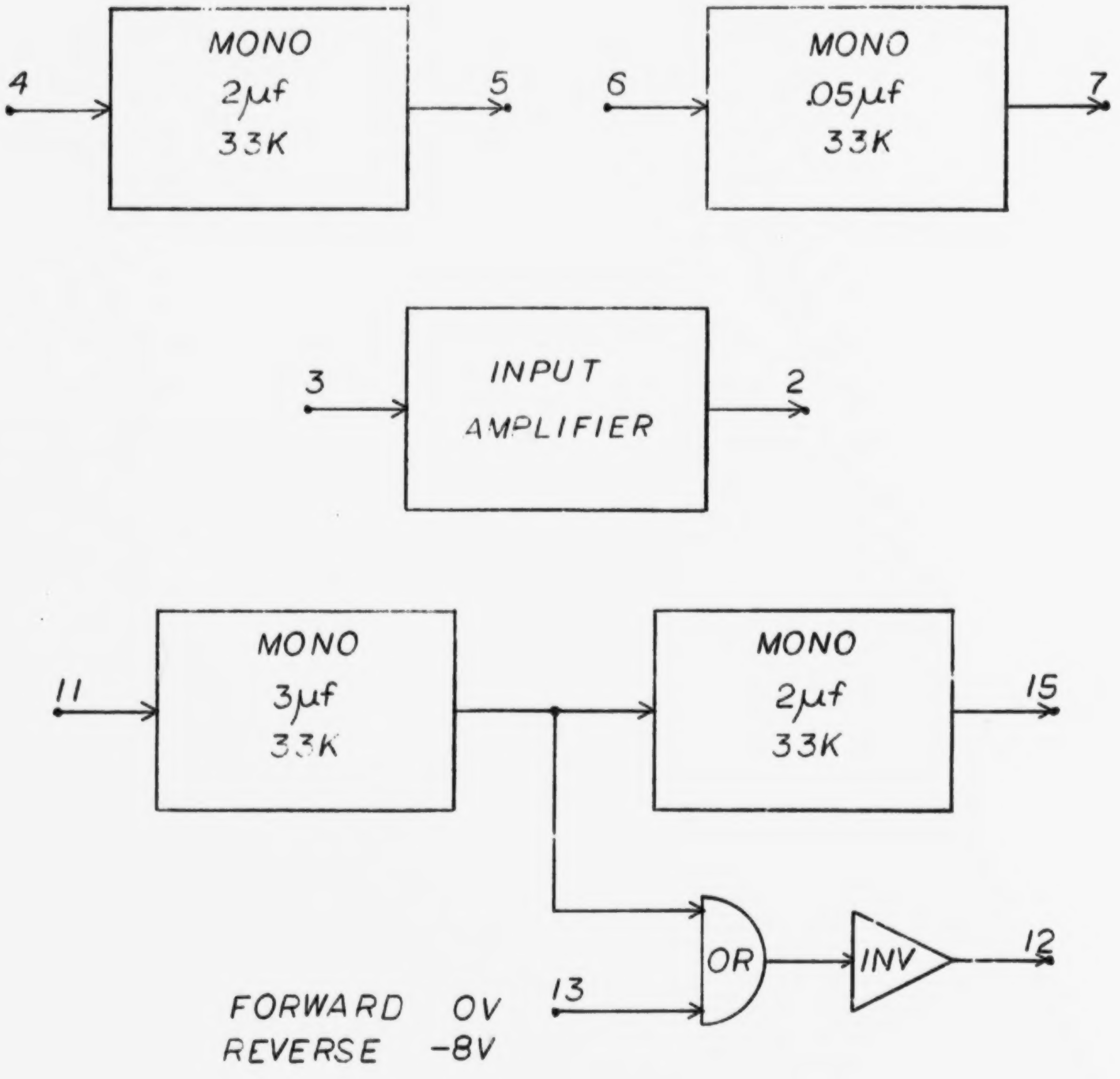
R1 IS AN 8.2K THERMISTOR - T.I.

THE OUTPUT CIRCUIT DIFFERS FROM UNIT TO UNIT DUE TO CHANGE IN GATHERING OF DATA.

SEE BOARD NO. 1

DETAIL FROM
ASCS TEACHING MACHINE

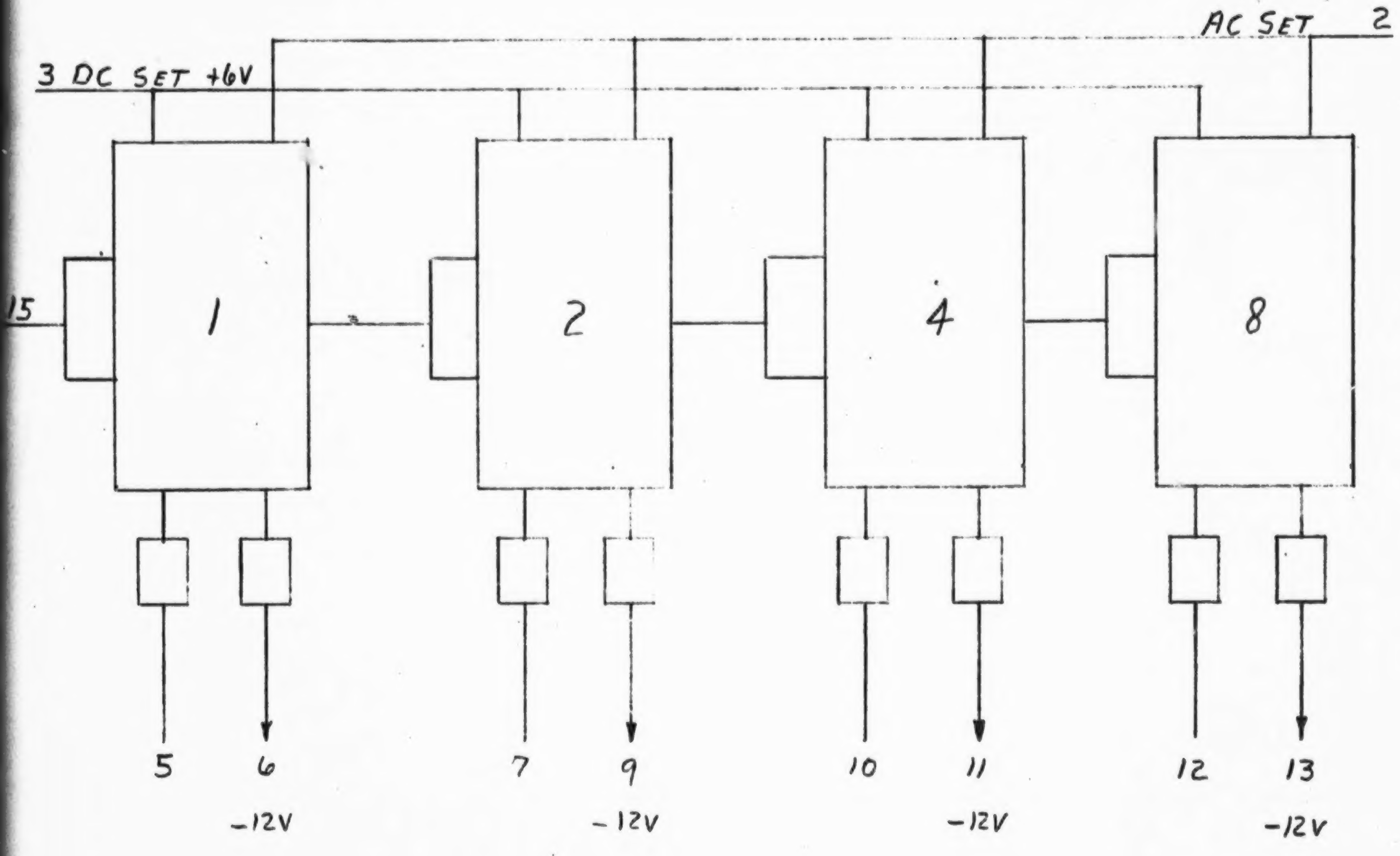
BOARD I



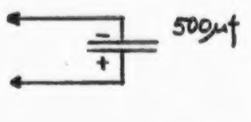
MONO
2µf
33K
4
5
MONO
.05µf
33K
6
7
INPUT
AMPLIFIER
3
2
MONO
3µf
33K
11
MONO
2µf
33K
15
OR
INV
12
13
FORWARD OV
REVERSE -8V

DETAIL FROM
ASCS-MOD TEACHING MACHIN

BOARD 2

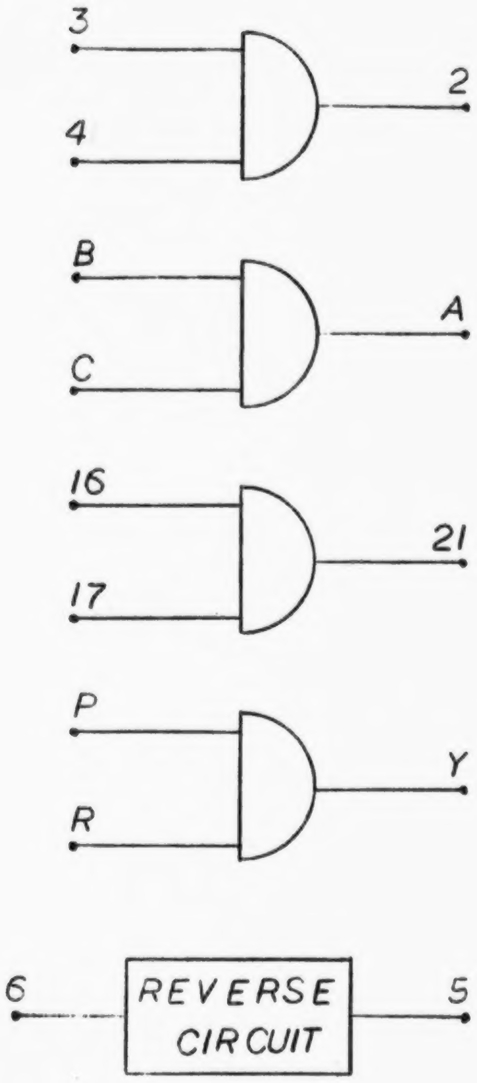

3 DC SET +6V
AC SET 2
15
1
2
4
8
5
6
-12V
7
9
-12V
10
11
-12V
12
13
-12V

PIN 1 -12V
8 GND
16 +6



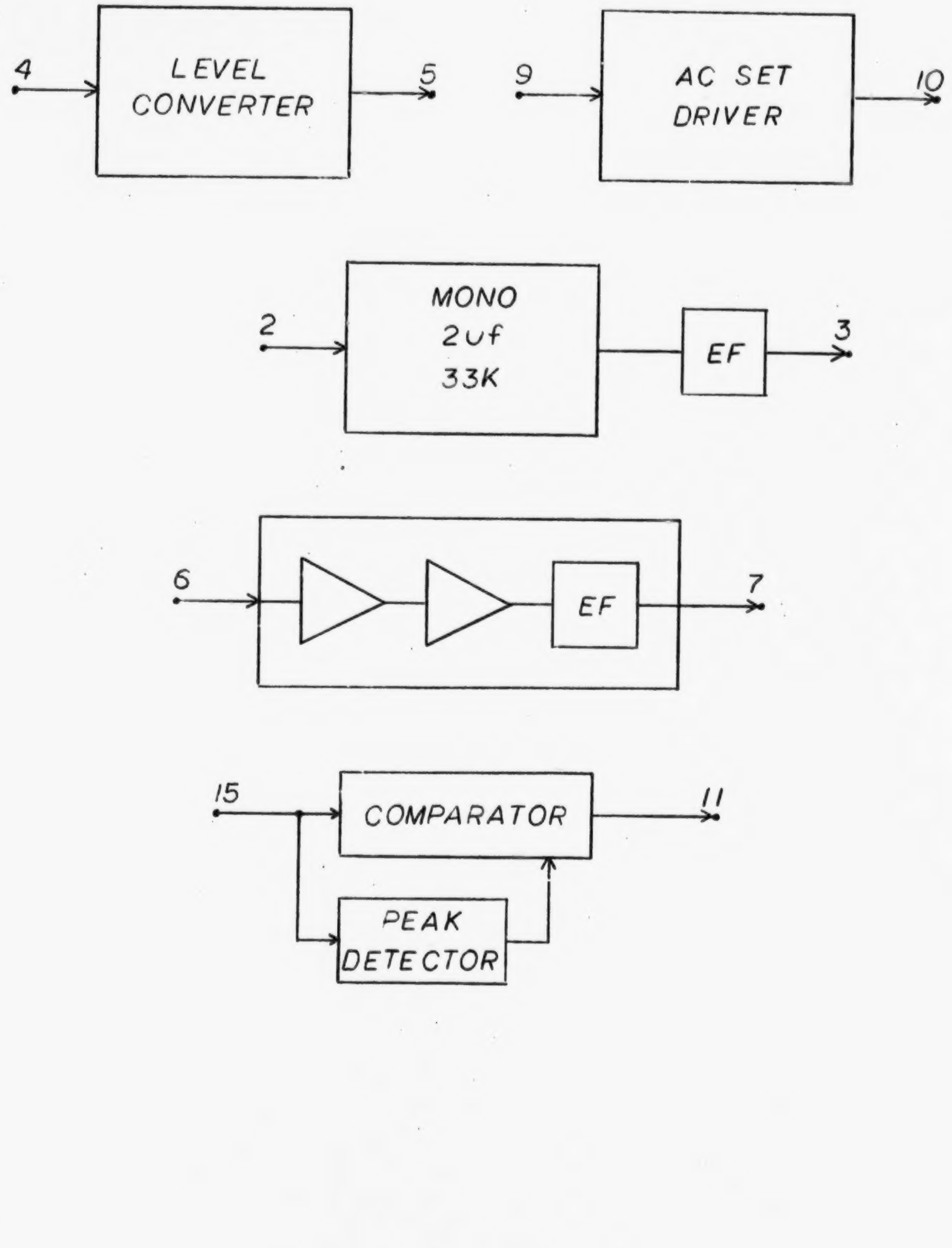
DETAIL FROM
ASCS-MOD TEACHING MACHINE

BOARD 3


3
4
2
B
C
A
16
17
21
P
R
Y
6
REVERSE CIRCUIT
5

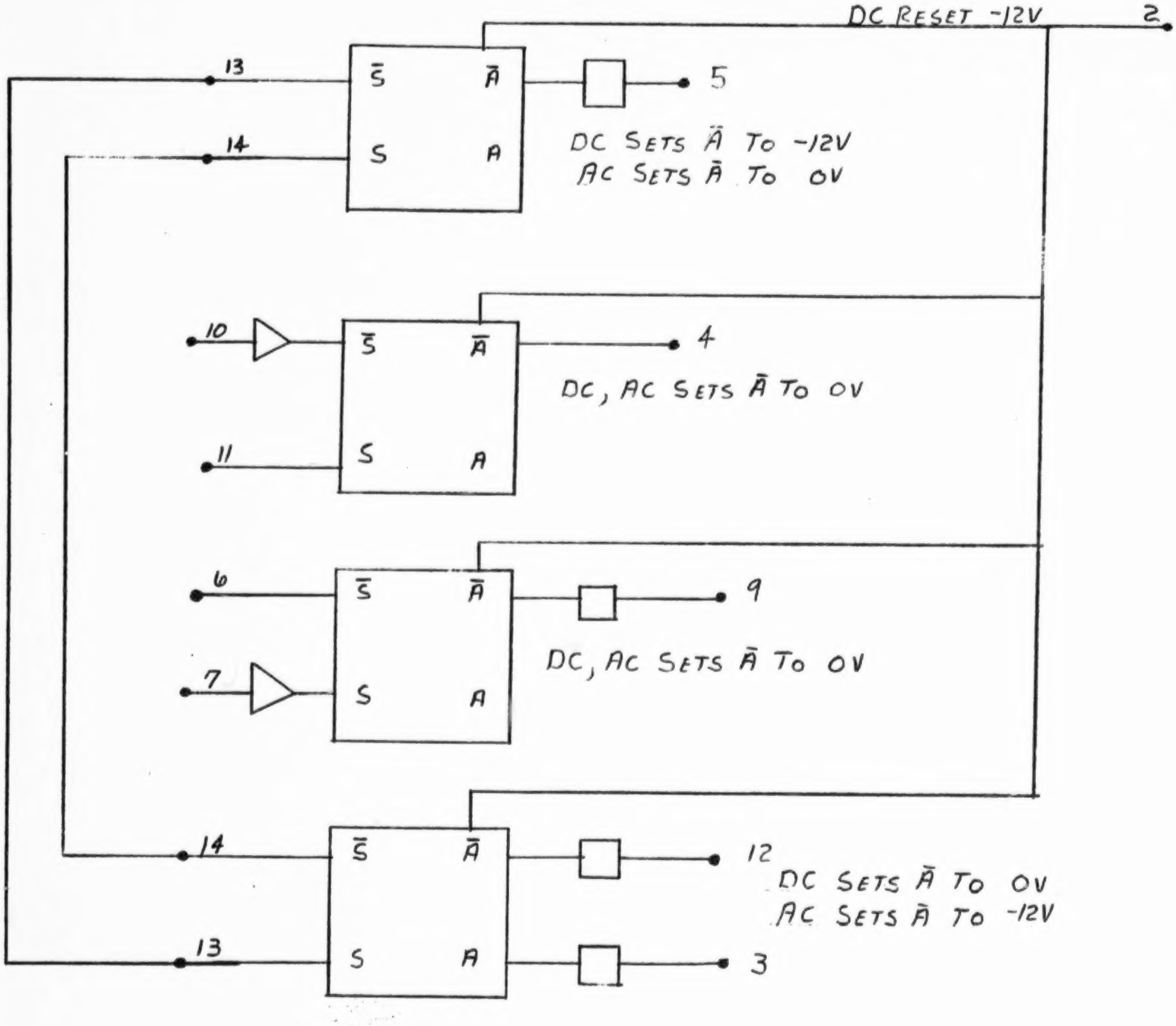
DETAIL FROM
ASCS-MOD TEACHING MACHINE

BOARD 4


4
LEVEL CONVERTER
5
9
AC SET DRIVER
10
2
MONO
2uf
33K
EF
3
6
EF
7
15
COMPARATOR
11
PEAK DETECTOR

DETAIL FROM
ASCS-MOD TEACHING MACHINE

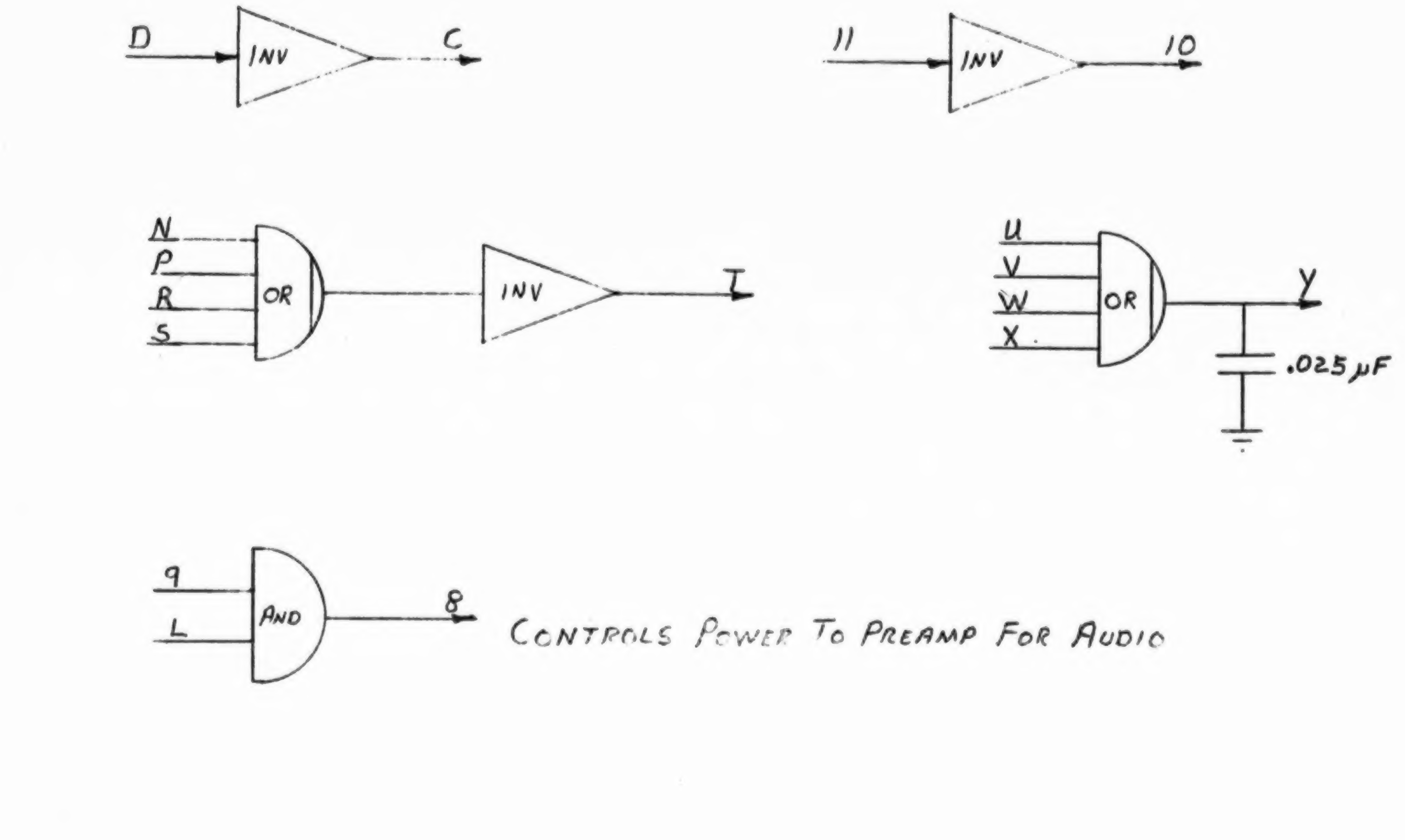
BOARD 5



DC RESET -12V
2
13
14
$\bar{S}$
S
$\bar{A}$
A
5
DC SETS $\bar{A}$ TO -12V
AC SETS $\bar{A}$ TO 0V
10
11
4
DC, AC SETS $\bar{A}$ TO 0V
6
7
9
DC, AC SETS $\bar{A}$ TO 0V
14
13
12
DC SETS $\bar{A}$ TO 0V
AC SETS $\bar{A}$ TO -12V
3

DETAIL FROM
ASCS-MOD TEACHING MACHINE

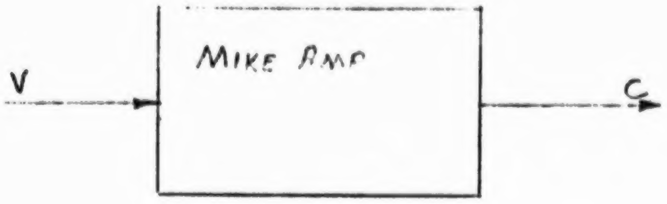
BOARD 6

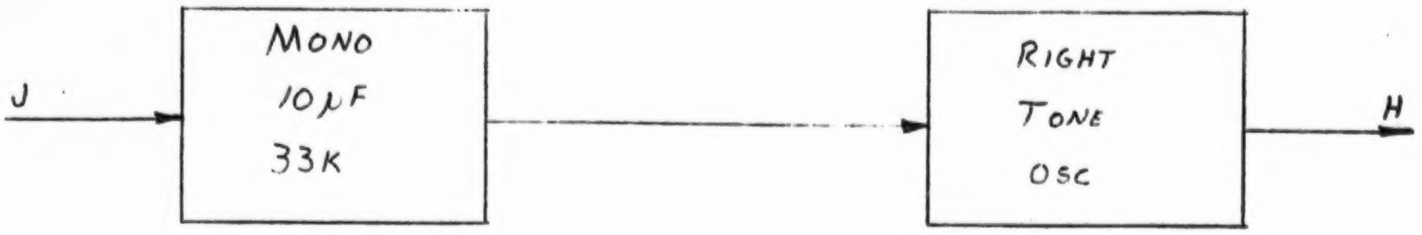

D
INV
C
11
INV
10
N
P
R
S
OR
INV
T
U
V
W
X
OR
Y
.025 µF
9
L
AND
8
F
INV
E
17
18
AND
21
6
7
K
AND
5
3
4
OR
2
15
14
13
AND
EF
16

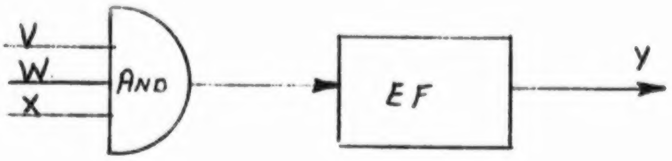
CONTROLS POWER TO PREAMP FOR AUDIO

DETAIL FROM
ASCS-MOD TEACHING MACHINE

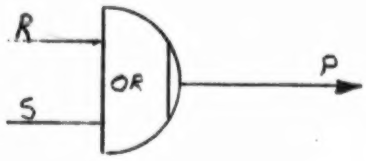
BOARD 7

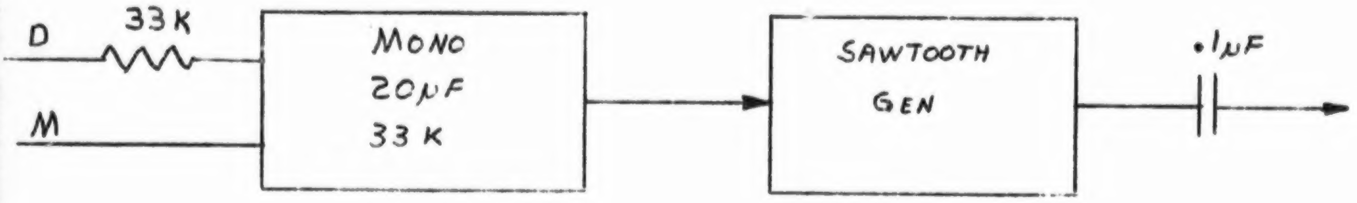



J
MONO
10µF
33K
RIGHT
TONE
OSC
H



PIN	22	-12V
	12	GND
	1	+6V

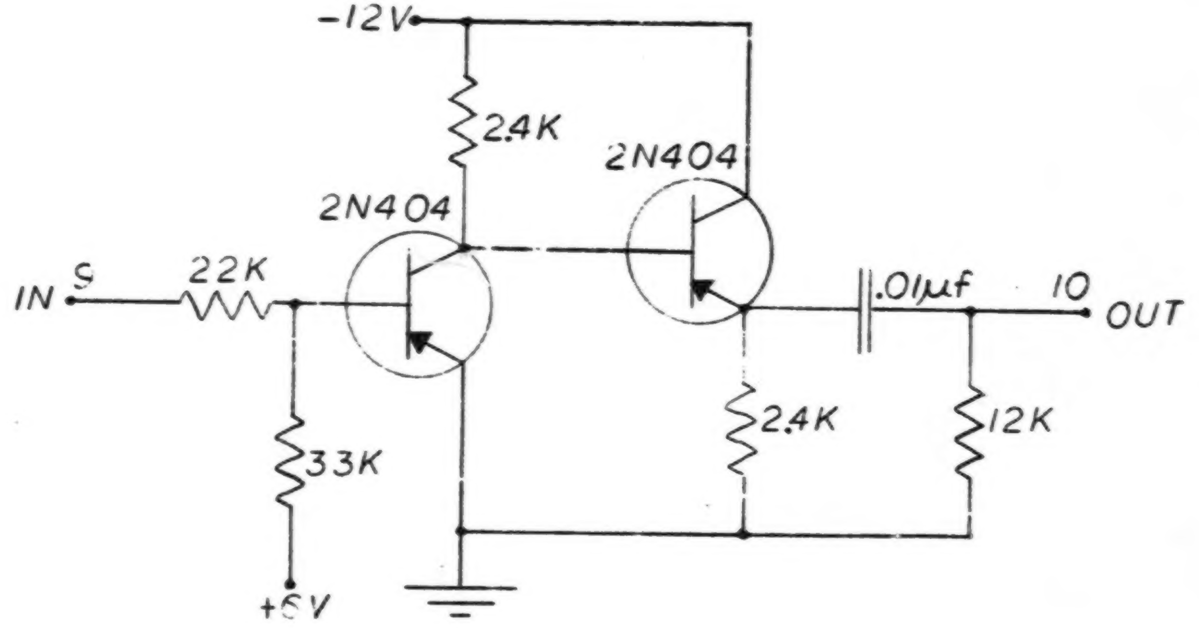



D
33K
M
MONO
20µF
33 K
SAWTOOTH
GEN
.1µF

ON THE BOARD BUT NOT USED

DETAIL FROM
ASCS-MOD TEACHING MACHINE

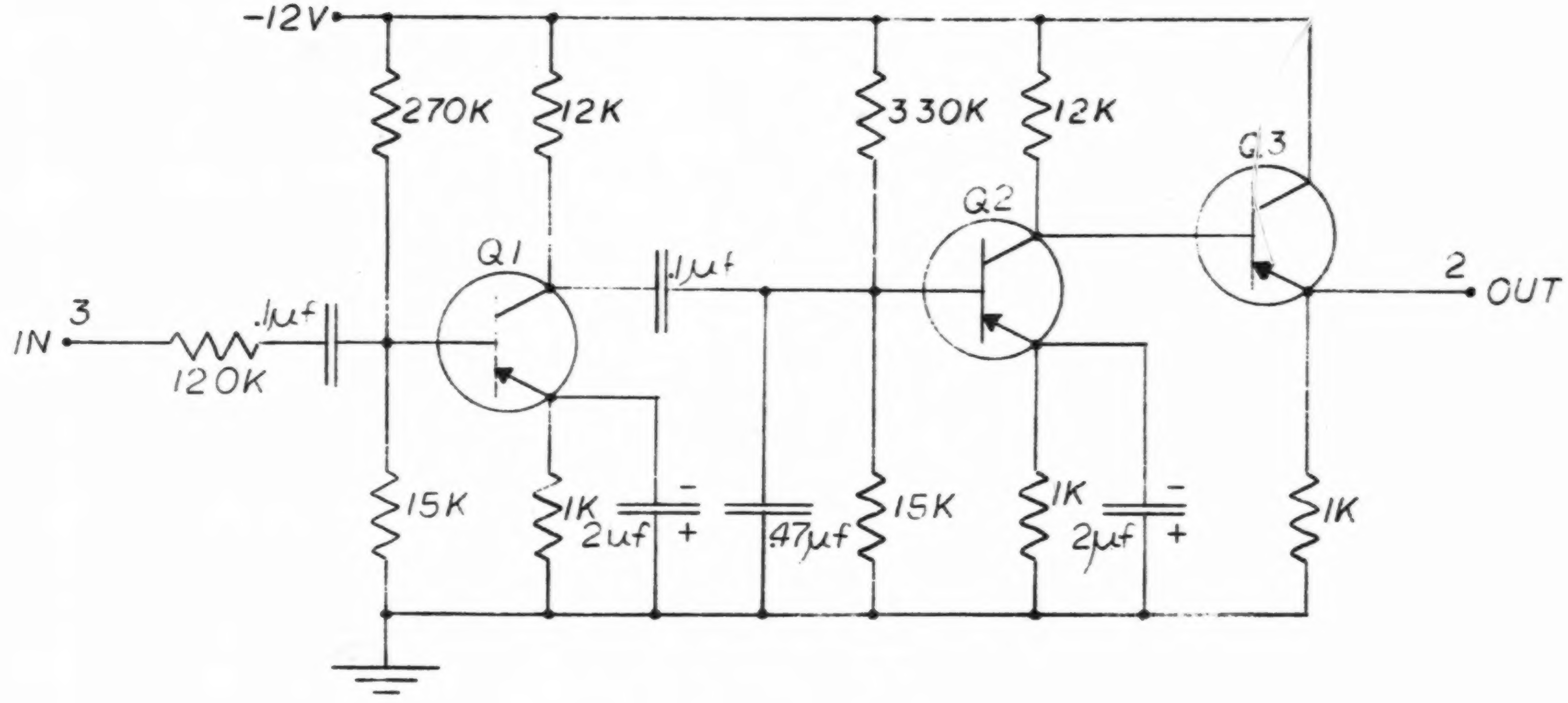
AC SET DRIVER


-12V
2.4K
2N404
2N404
IN
9
22K
33K
+6V
.01μf
10
OUT
2.4K
12K

SEE BOARD NO.4

DETAIL FROM
ASCS-MOD TEACHING MACHINE

INPUT AMPLIFIER

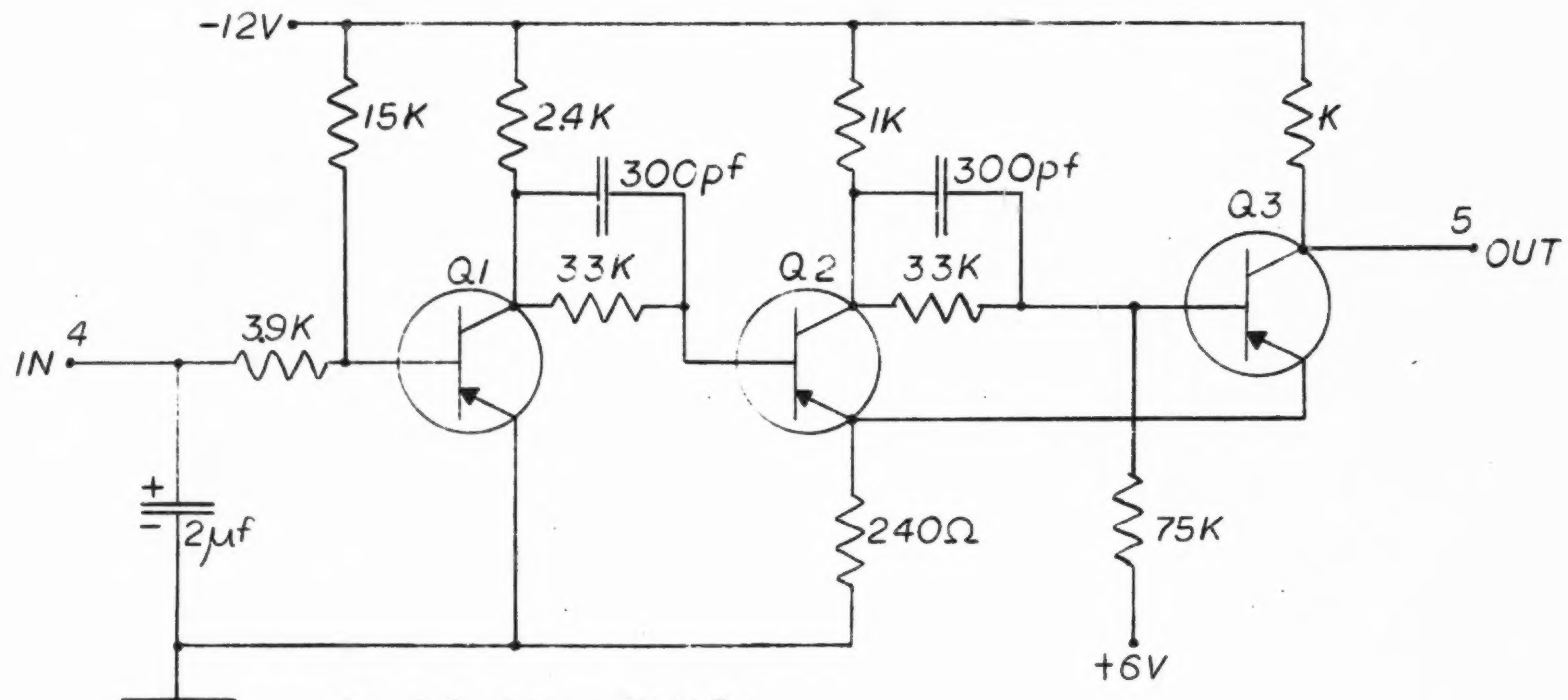

-12V
270K
12K
330K
12K
Q1
Q2
Q3
IN 3
120K
.1μf
.1μf
15K
1K
2uf
47μf
15K
1K
2μf
1K
2 OUT
-
+

Q1, Q2, Q3 → 2N404

SEE BOARD NO. 1

DETAIL FROM
ASCS-MOD TEACHING MACHINE

LEVEL CONVERTER

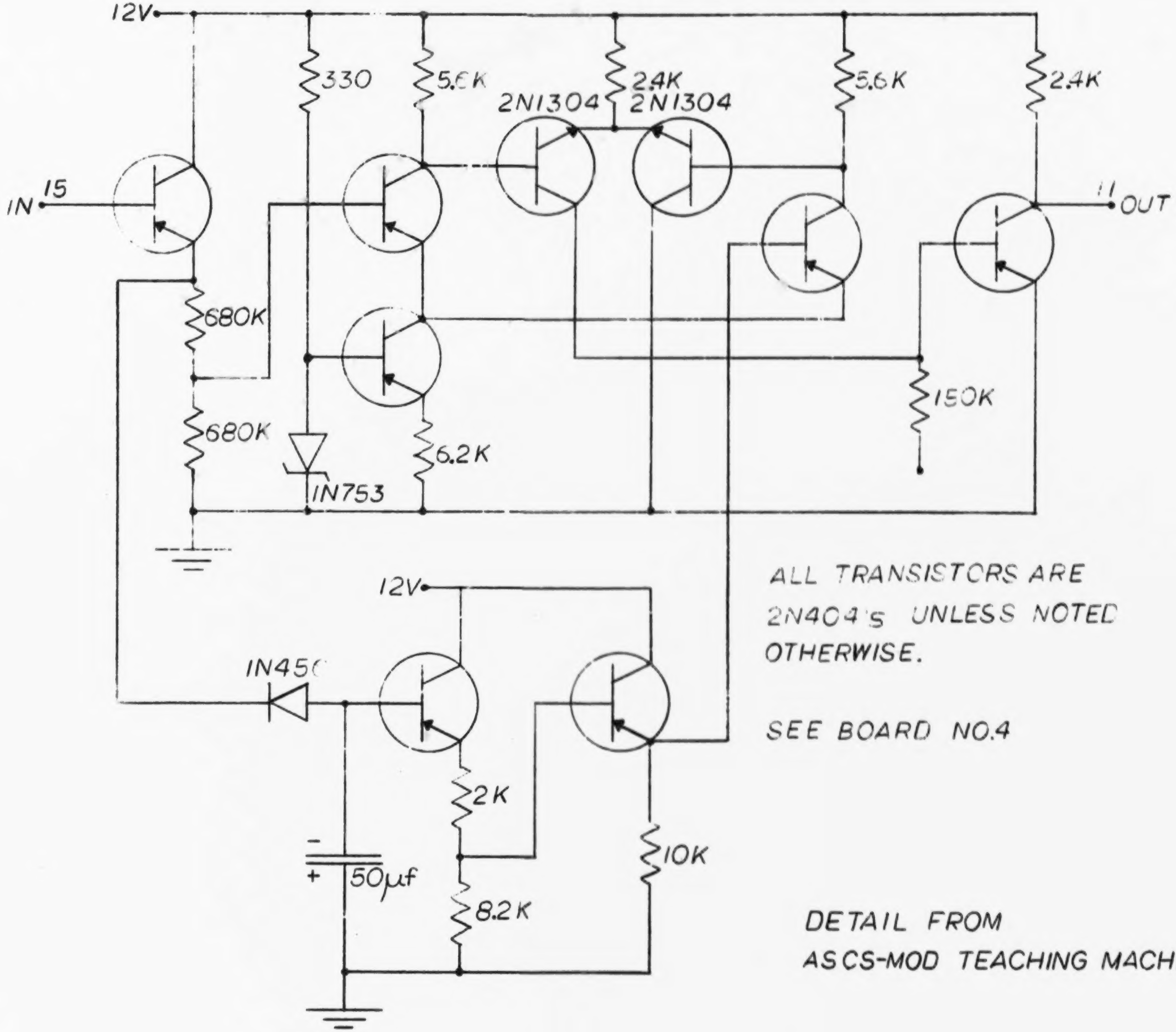

-12V
15K
2.4K
300pf
1K
300pf
K
Q1
33K
Q2
33K
Q3
5
OUT
IN
4
3.9K
+
-
2µf
240Ω
75K
+6V

Q1 Q2 Q3 ⟶ 2N404

SEE BOARD NO.4

DETAIL FROM
ASCS-MOD TEACHING MACHINE

PEAK DETECTOR AND COMPARATOR

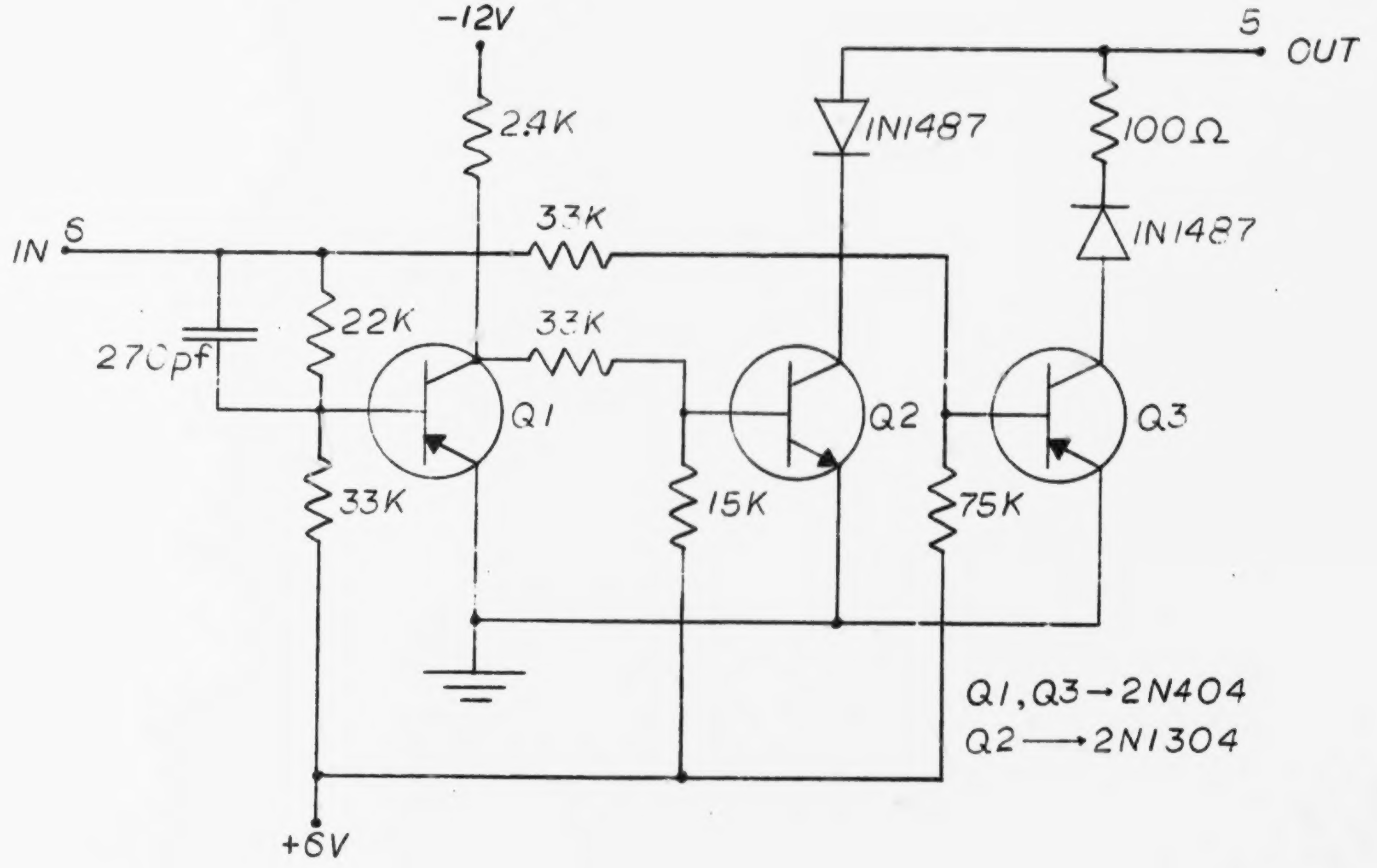

12V
IN
15
330
5.6K
2.4K
2N1304
2N1304
5.6K
2.4K
11
OUT
680K
680K
1N753
6.2K
150K
12V
1N45
2K
10K
50μf
8.2K

ALL TRANSISTORS ARE
2N404's UNLESS NOTED
OTHERWISE.

SEE BOARD NO.4

DETAIL FROM
ASCS-MOD TEACHING MACHINE

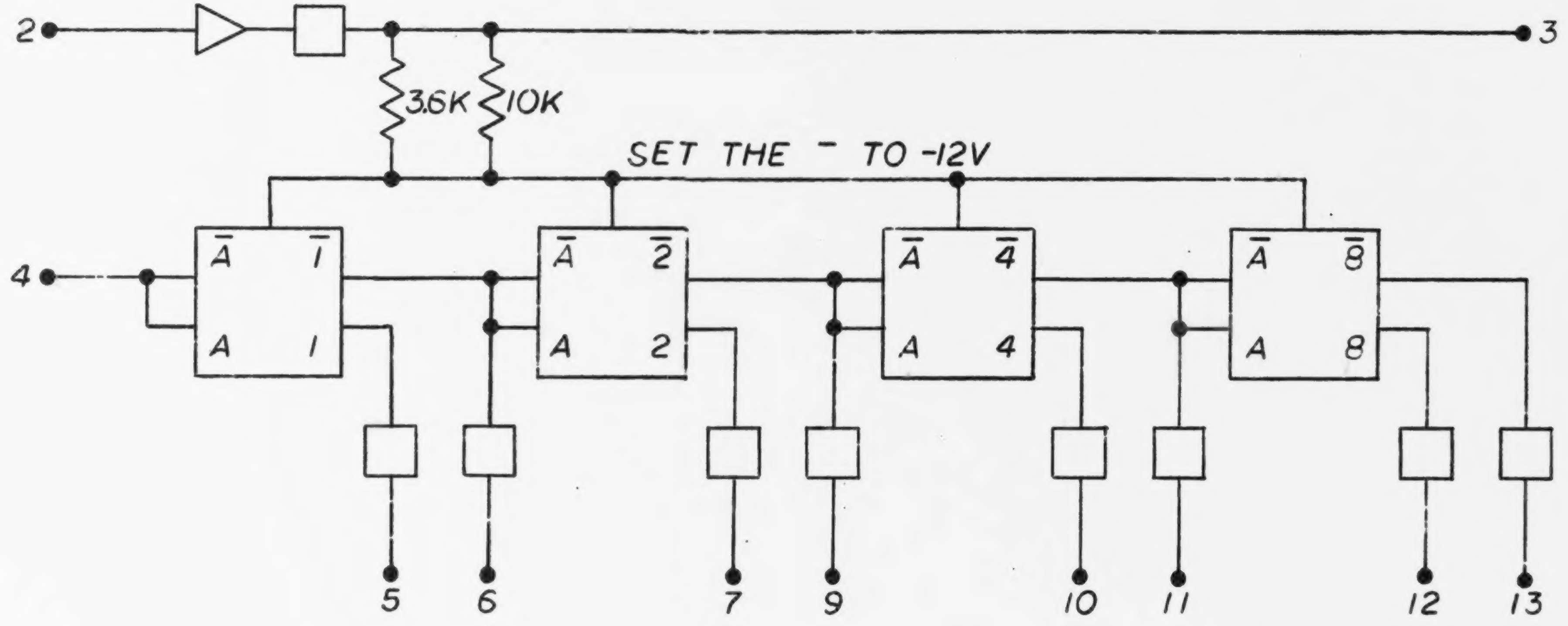
REVERSE CIRCUIT


-12V
2.4K
IN 5
270pf
22K
33K
33K
33K
Q1
15K
Q2
1N1487
75K
Q3
100Ω
1N1487
5 OUT
+6V
Q1, Q3 → 2N404
Q2 → 2N1304

SEE BOARD NO. 3

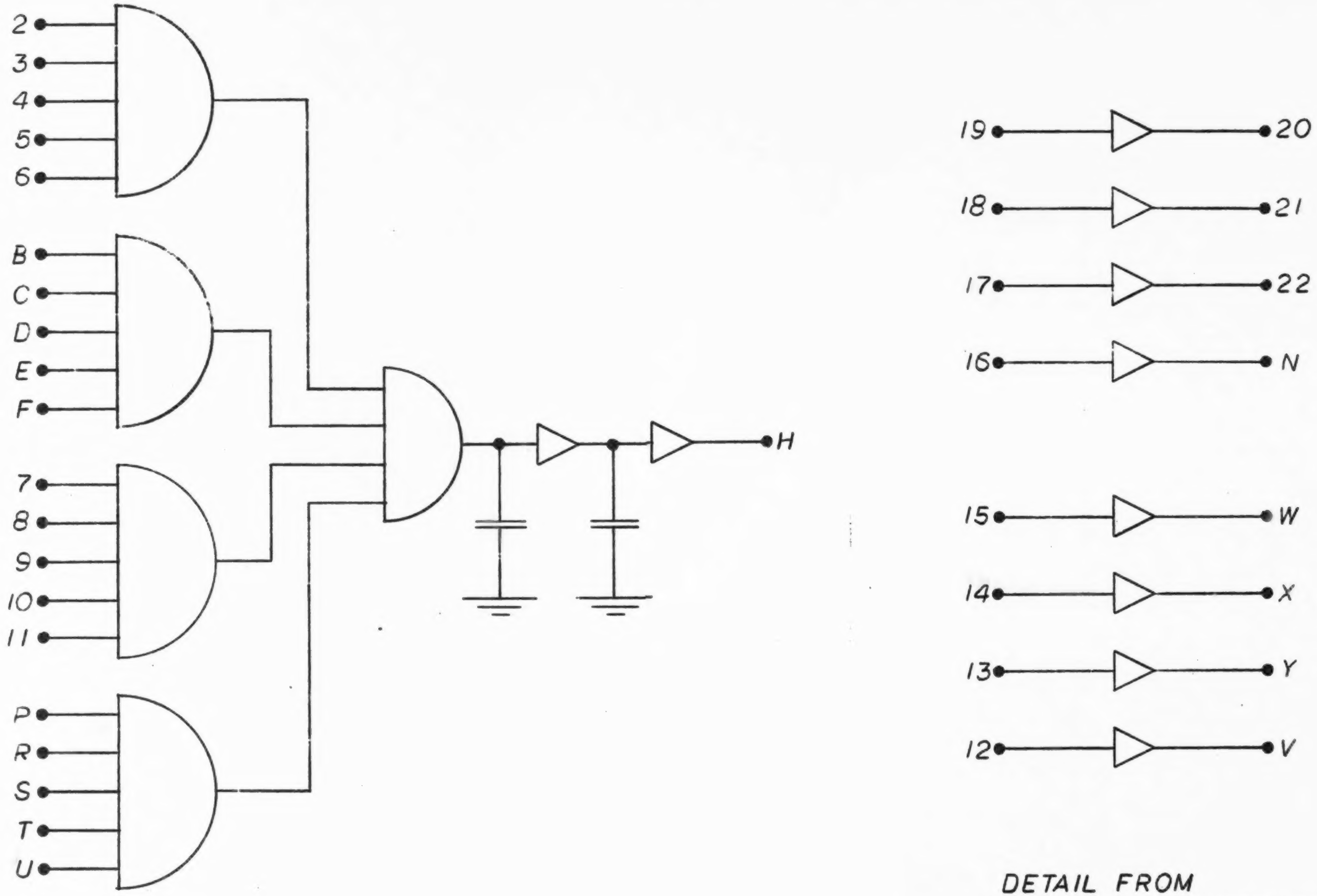
DETAIL FROM
ASCS-MOD TEACHING
MACHINE

BOARD NO. I
COUNTER


2
3
3.6K
10K
SET THE ‾ TO -12V
4
$\overline{A}$ $\overline{1}$
A 1
$\overline{A}$ $\overline{2}$
A 2
$\overline{A}$ $\overline{4}$
A 4
$\overline{A}$ $\overline{8}$
A 8
5
6
7
9
10
11
12
13

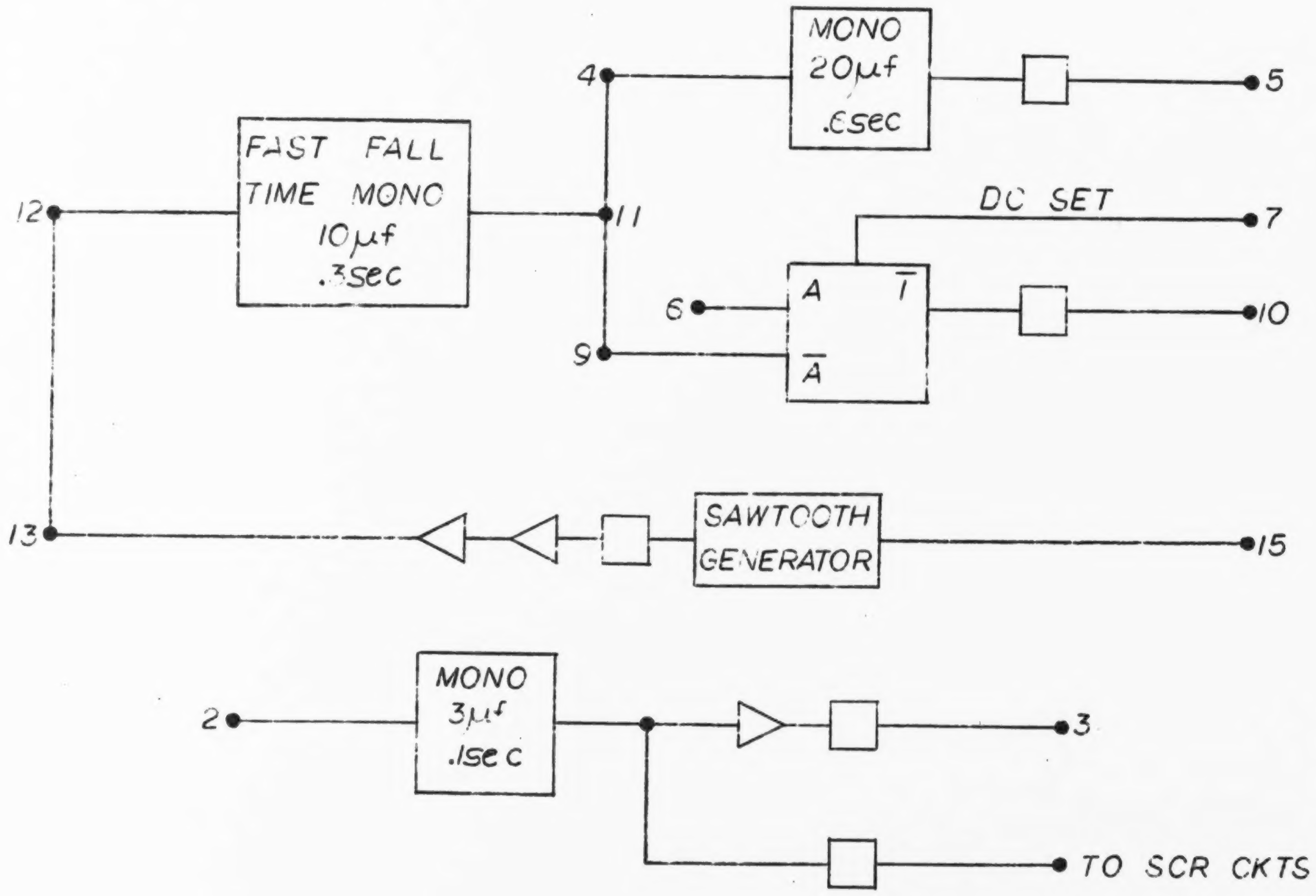
DETAIL FROM
CODE GENERATOR

BOARD NO. 2


2
3
4
5
6
B
C
D
E
F
7
8
9
10
11
P
R
S
T
U
H
19
20
18
21
17
22
16
N
15
W
14
X
13
Y
12
V

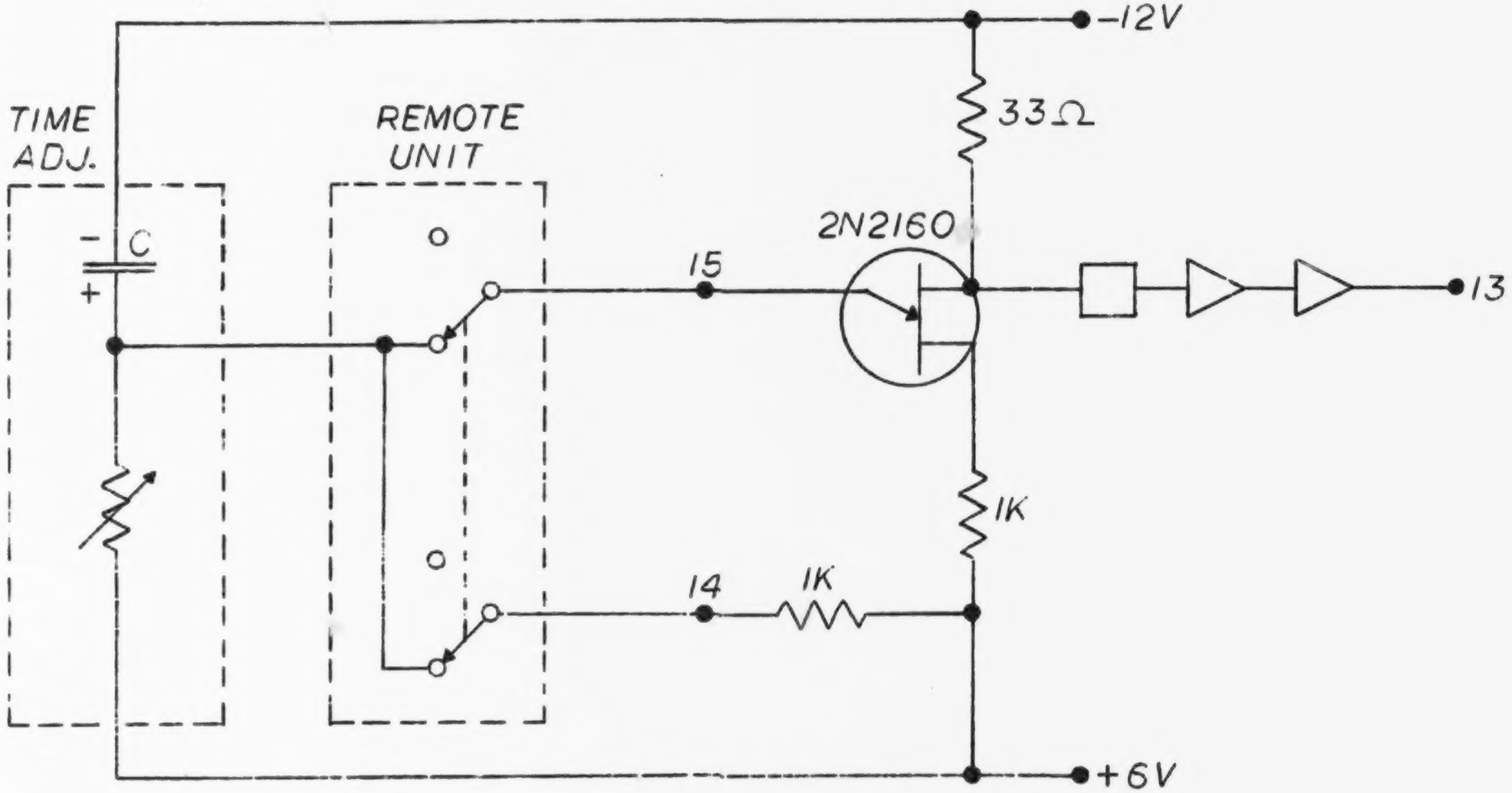
DETAIL FROM
CODE GENERATOR

BOARD NO.3


MONO
20μf
.6sec
FAST FALL
TIME MONO
10μf
.3sec
DC SET
A
$\overline{T}$
$\overline{A}$
SAWTOOTH
GENERATOR
MONO
3μf
.1sec
TO SCR CKTS
12
13
4
11
9
6
5
7
10
15
2
3

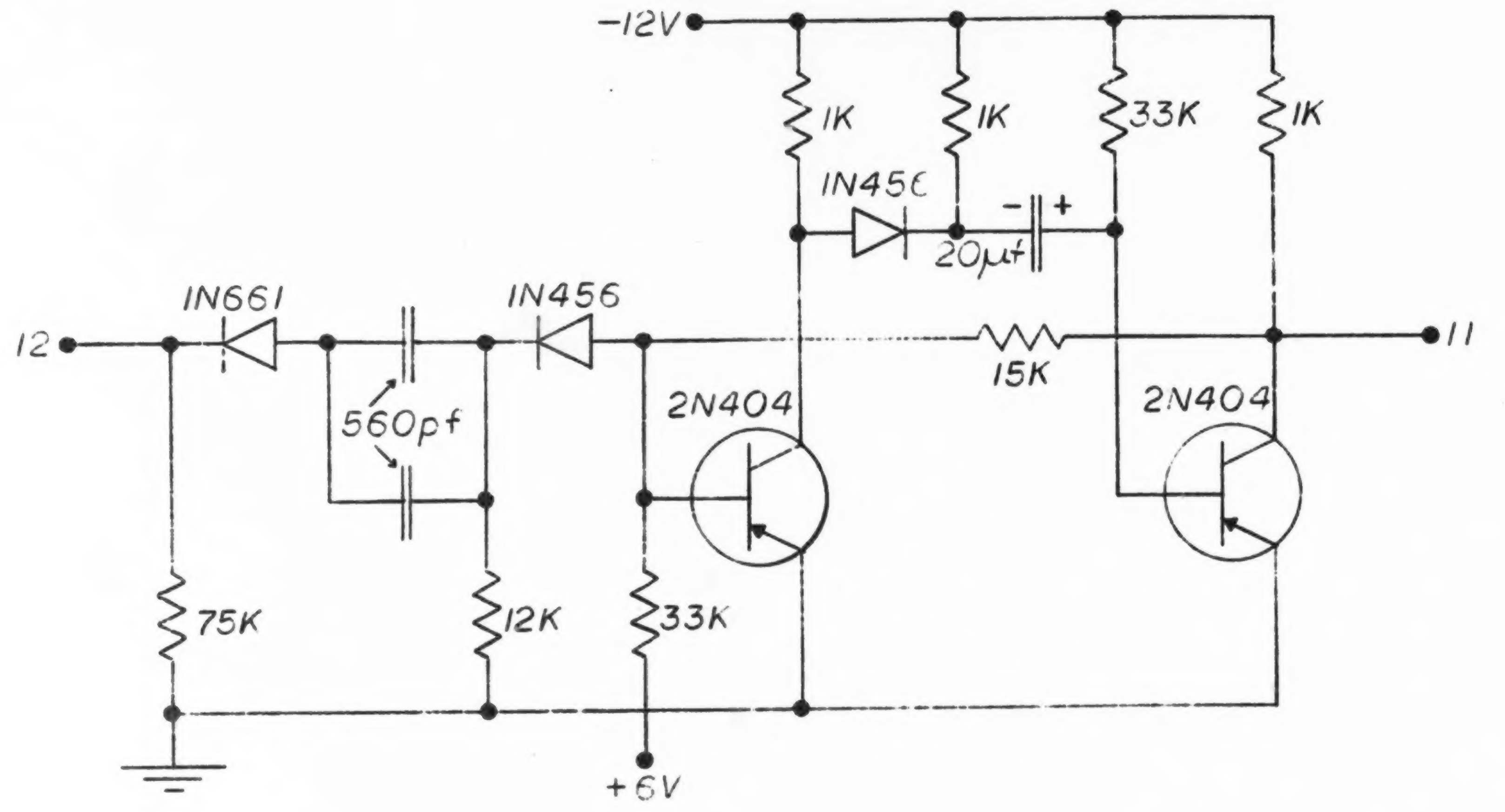
DETAIL FROM
CODE GENERATOR

SAWTOOTH GENERATOR


-12V
TIME ADJ.
REMOTE UNIT
C
-
+
33Ω
2N2160
15
13
14
1K
1K
+6V

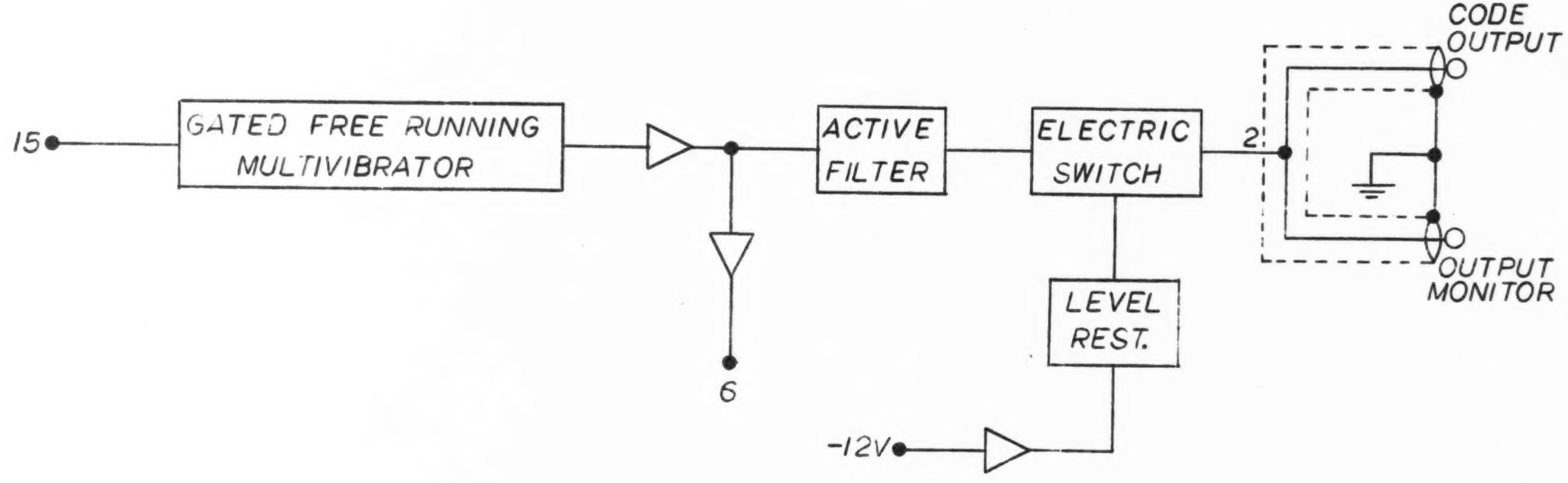
DETAIL FROM BOARD 3 OF
CODE GENERATOR

FAST FALL TIME MONO


-12V
1K
1K
33K
1K
IN456
20µf
-
+
IN661
IN456
12
11
15K
560pf
2N404
2N404
75K
12K
33K
+6V

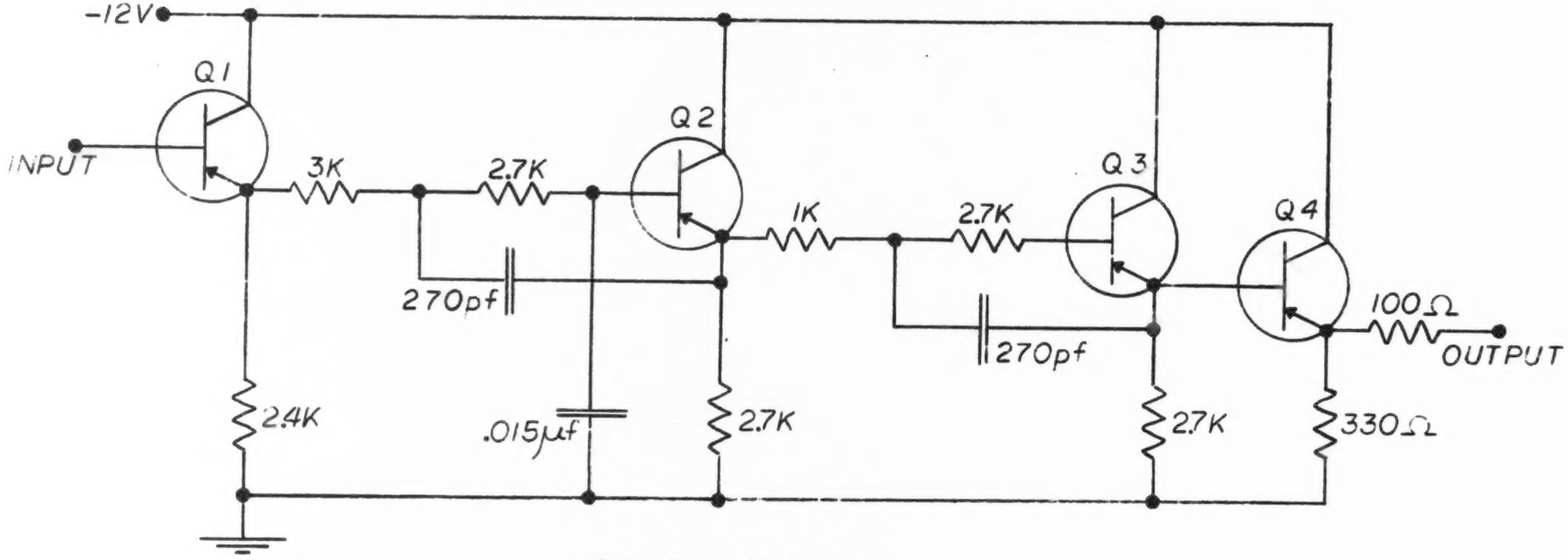
DETAIL FROM BOARD 3 OF
CODE GENERATOR

BOARD NO. 4


15
GATED FREE RUNNING MULTIVIBRATOR
6
ACTIVE FILTER
ELECTRIC SWITCH
LEVEL REST.
-12V
2
CODE OUTPUT
OUTPUT MONITOR

DETAIL FROM
CODE GENERATOR

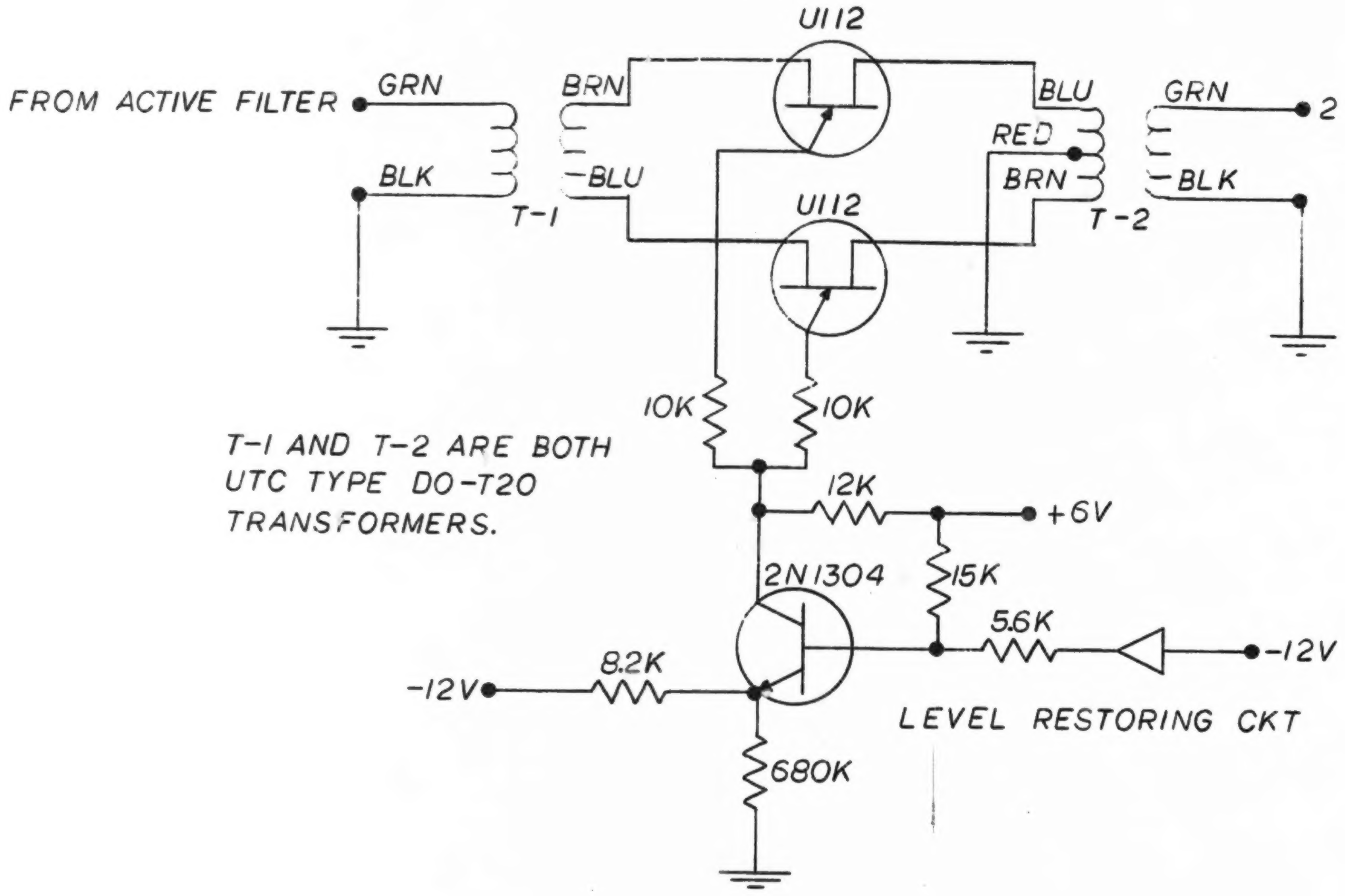
ACTIVE FILTER


-12V
Q1
INPUT
3K
2.7K
Q2
270pf
.015μf
2.4K
2.7K
1K
2.7K
Q3
270pf
2.7K
Q4
100Ω
OUTPUT
330Ω

Q1–Q4 2N404

DETAIL FROM BOARD 4 OF
CODE GENERATOR

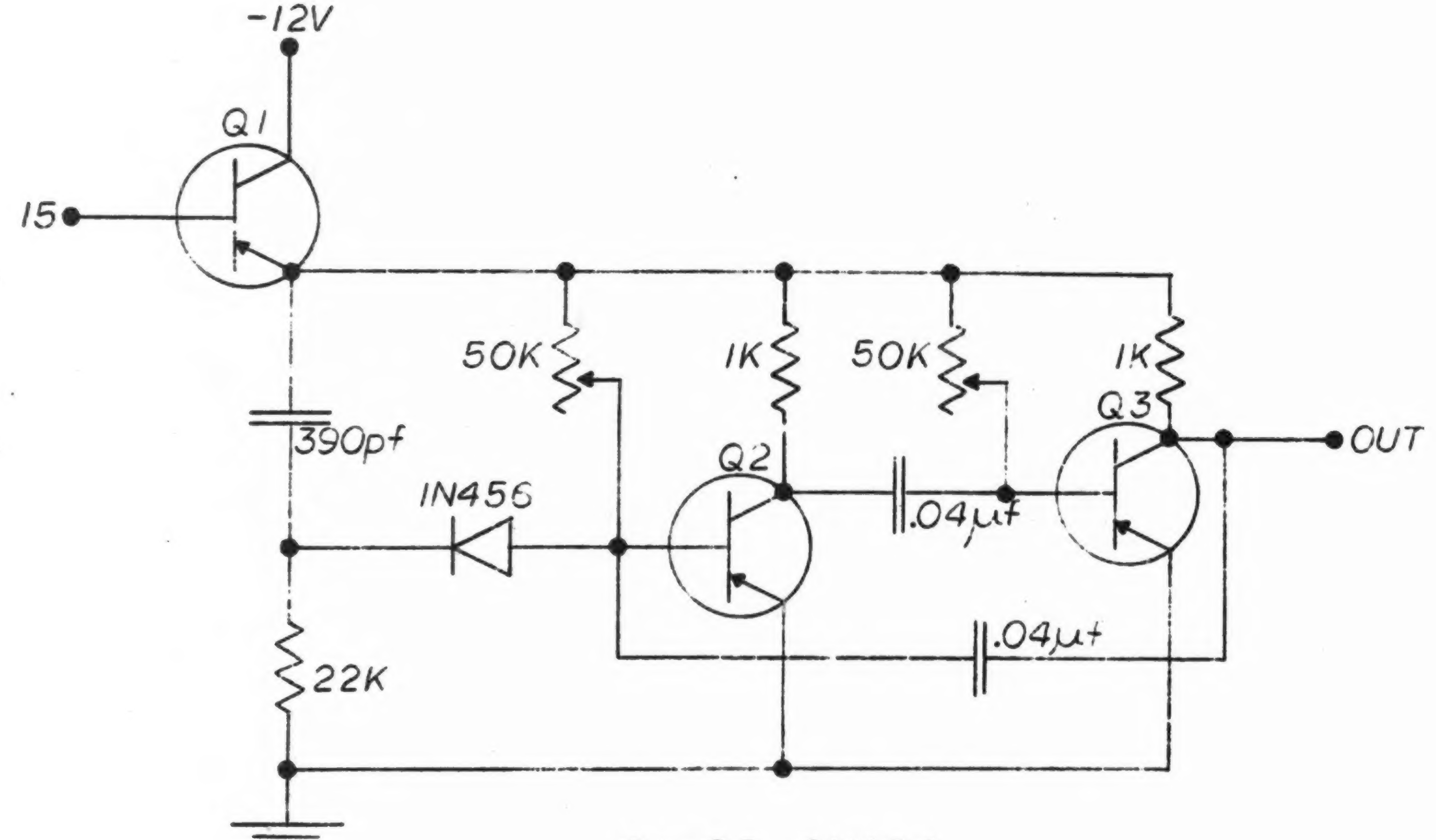
ELECTRIC SWITCH


U112
FROM ACTIVE FILTER
GRN
BLK
T-1
BRN
BLU
U112
BLU
RED
BRN
T-2
GRN
2
BLK
10K
10K
12K
+6V
15K
2N1304
5.6K
-12V
8.2K
-12V
680K
LEVEL RESTORING CKT

T-1 AND T-2 ARE BOTH
UTC TYPE DO-T20
TRANSFORMERS.

DETAIL FROM BOARD 4 OF
CODE GENERATOR

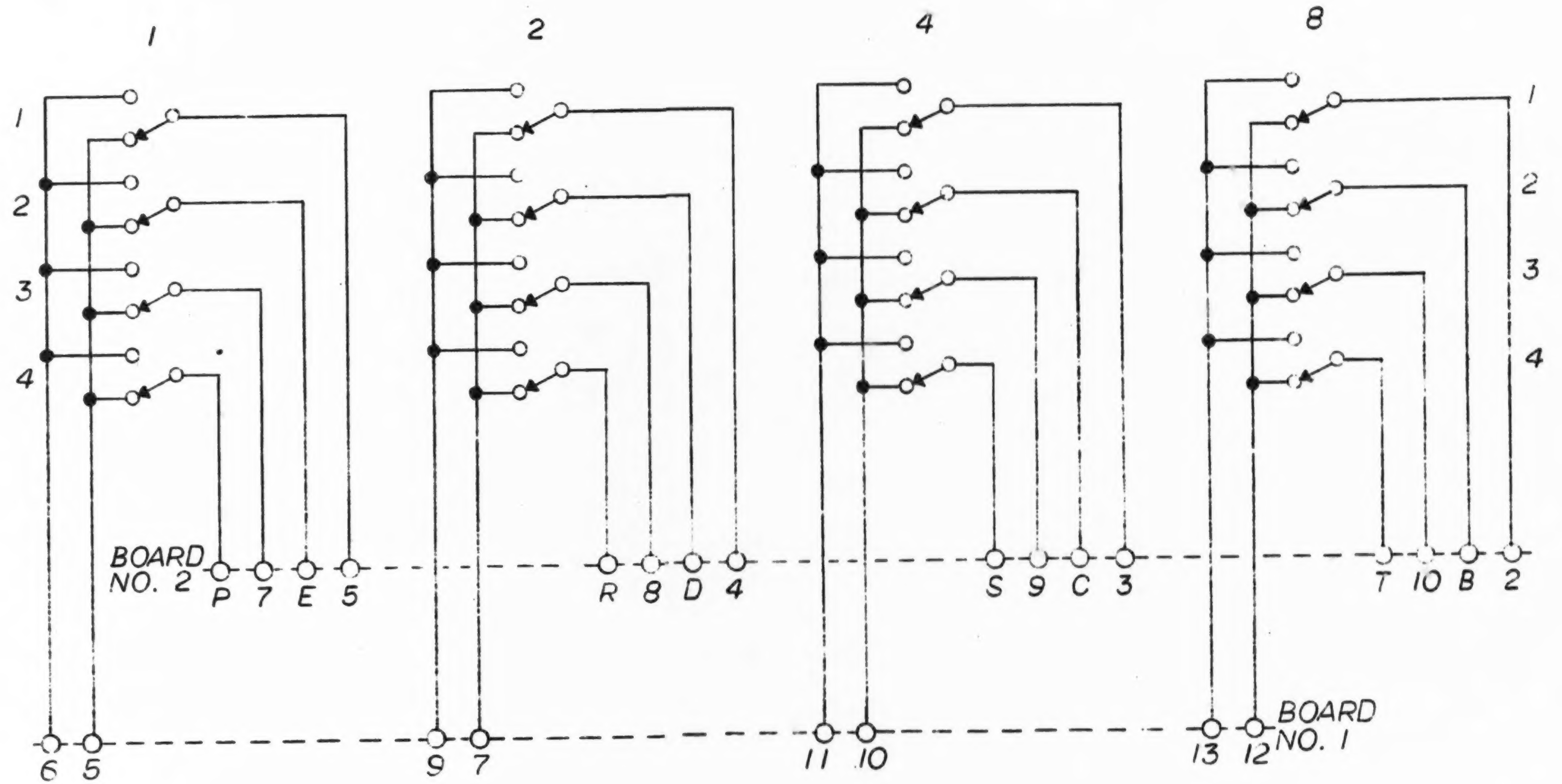
GATED FREE RUNNING MULTIVIBRATOR


-12V
Q1
15
50K
1K
50K
1K
Q3
Q2
390pf
1N456
.04µf
.04µf
OUT
22K

Q1-Q3 2N404

DETAIL FROM BOARD 4 OF
CODE GENERATOR

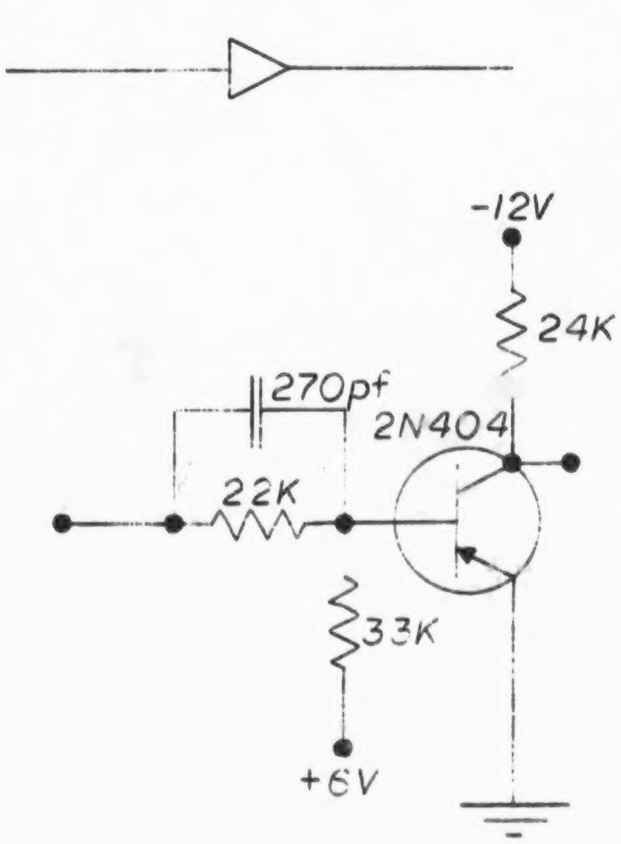
CODE SELECTOR SWITCHES


1
2
4
8
1
2
3
4
1
2
3
4
BOARD NO. 2
P
7
E
5
R
8
D
4
S
9
C
3
T
10
B
2
6
5
9
7
11
10
13
12
BOARD NO. 1

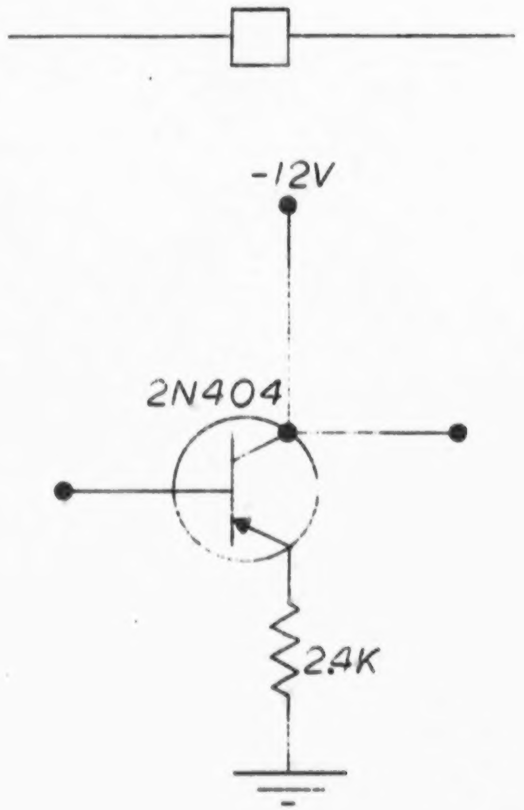
NOTE
THE TOGGLE POSITION OF ALL SWITCHES IS DOWN

DETAIL FROM
CODE GENERATOR

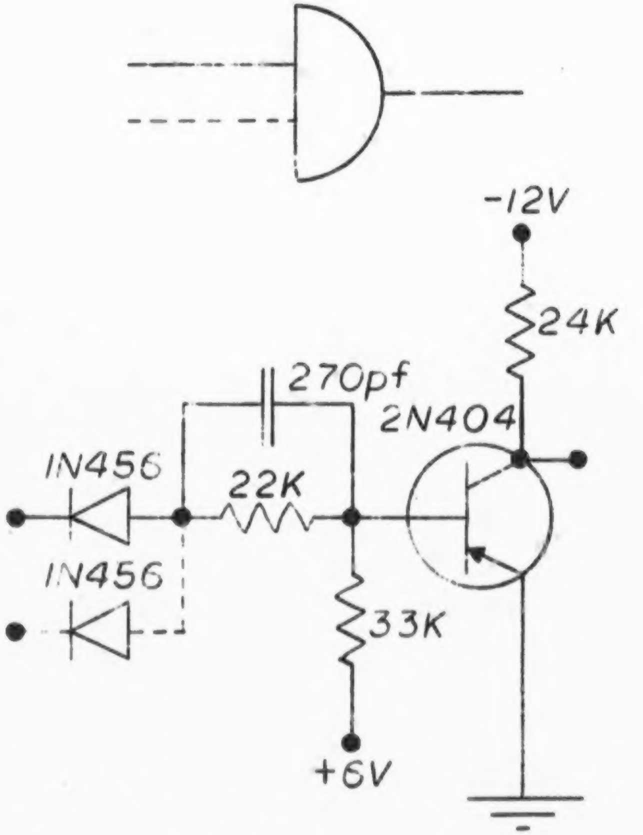
INVERTER


-12V
24K
270pf
2N404
22K
33K
+6V

EMITTER FOLLOWER

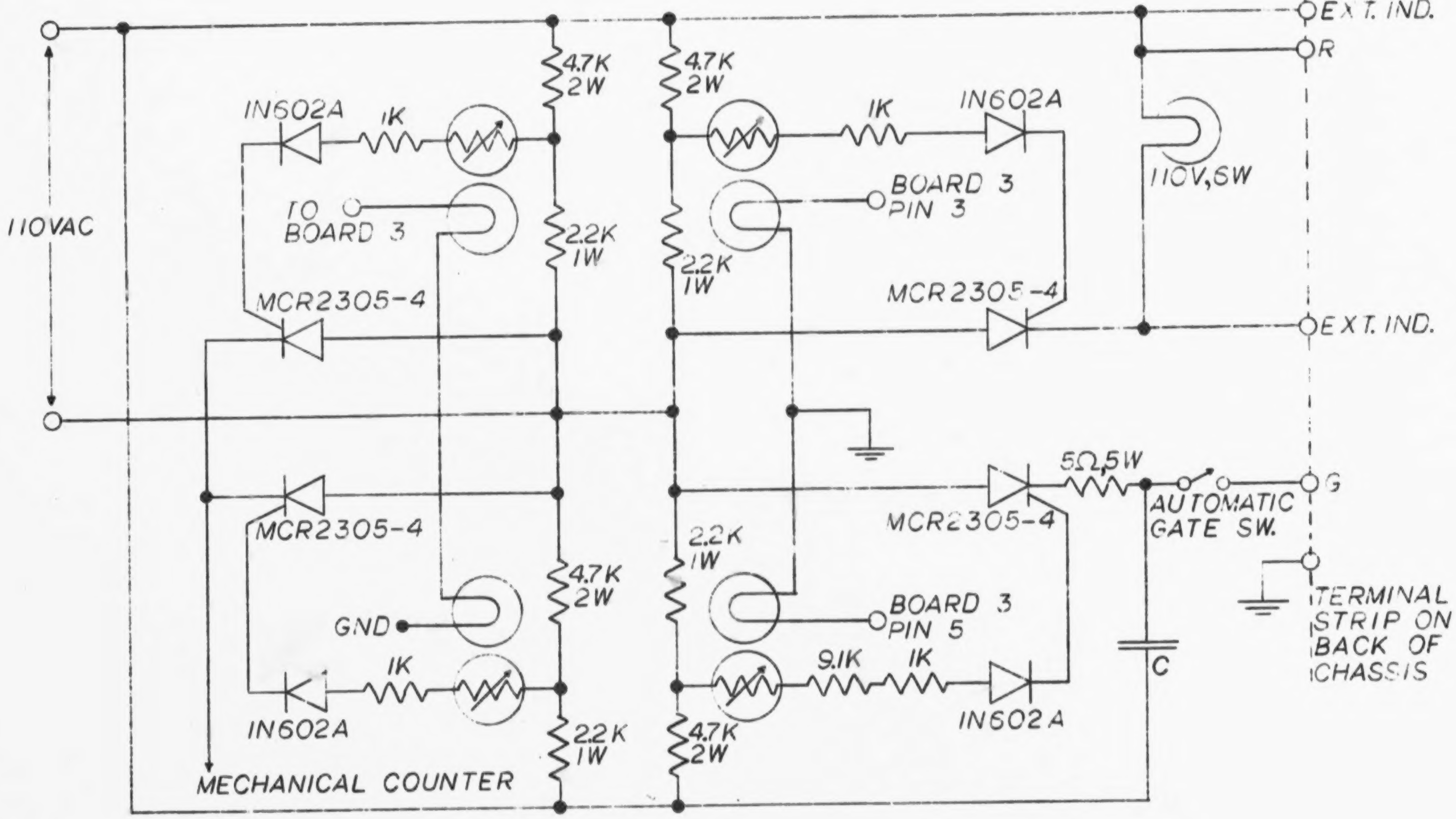

-12V
2N404
2.4K

DIODE GATE


-12V
24K
270pf
2N404
1N456
22K
1N456
33K
+6V

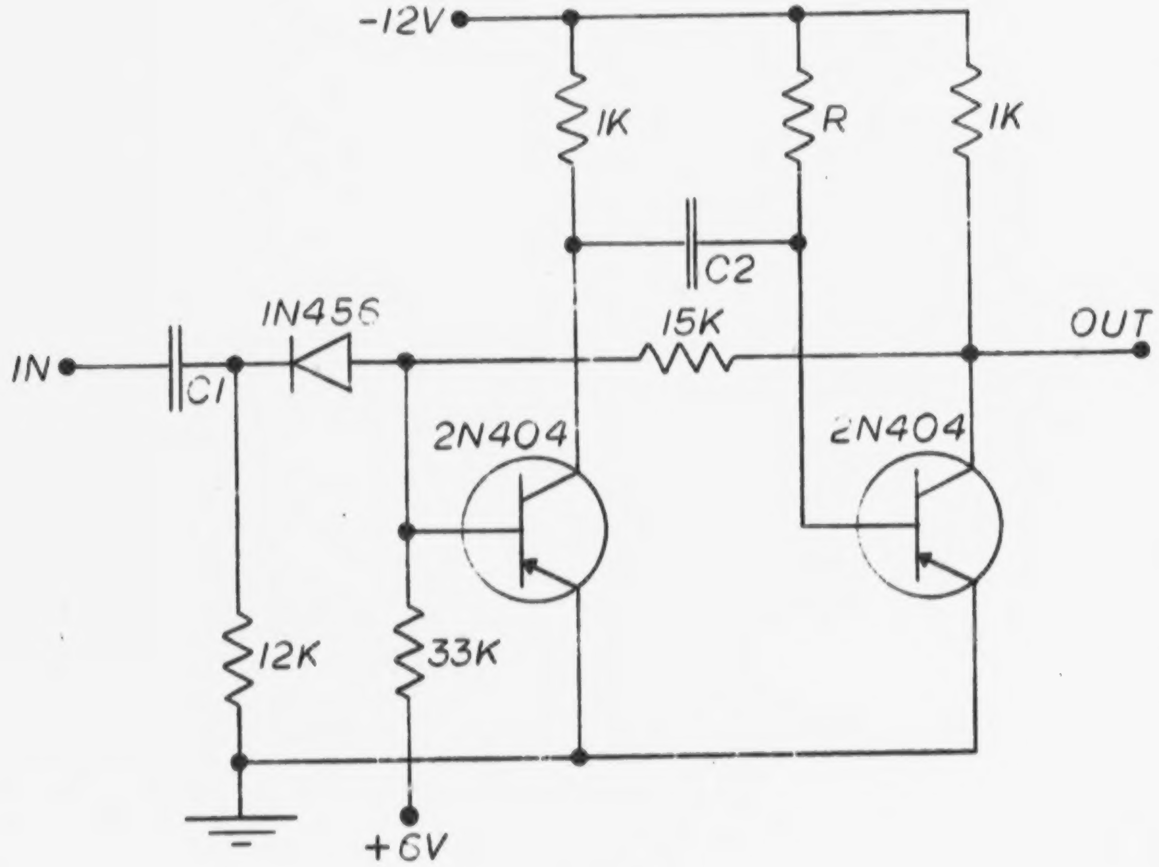
DETAIL FROM
CODE GENERATOR

SCR CIRCUIT


110VAC
4.7K 2W
IN602A
1K
TO BOARD 3
2.2K 1W
MCR2305-4
MCR2305-4
GND
4.7K 2W
IN602A
1K
2.2K 1W
MECHANICAL COUNTER
4.7K 2W
1K
IN602A
BOARD 3 PIN 3
2.2K 1W
MCR2305-4
110V,6W
EXT. IND.
R
EXT. IND.
5Ω,5W
AUTOMATIC GATE SW.
G
MCR2305-4
2.2K 1W
BOARD 3 PIN 5
9.1K
1K
IN602A
4.7K 2W
C
TERMINAL STRIP ON BACK OF CHASSIS

DETAIL FROM
CODE GENERATOR

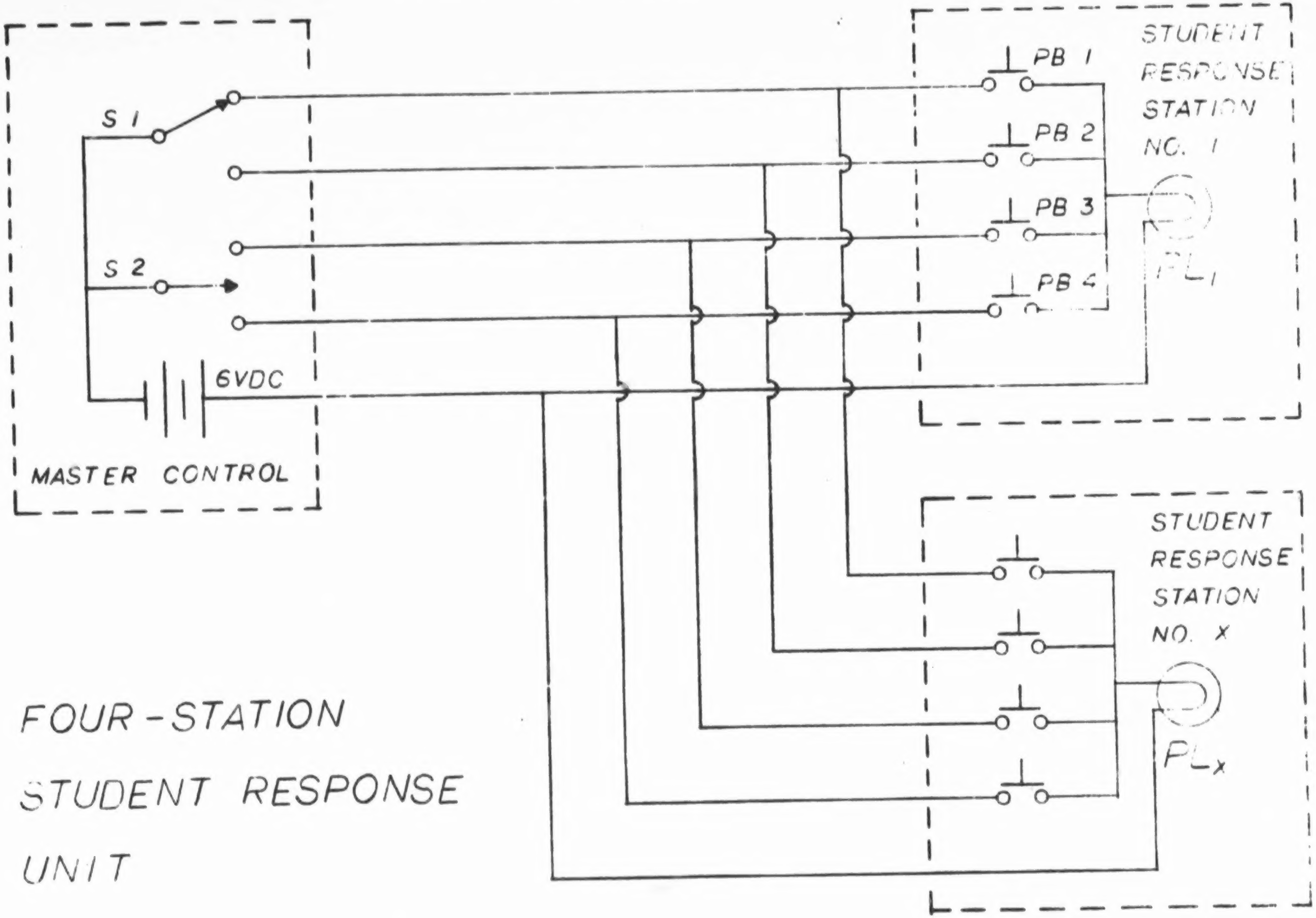
STANDARD MONO


-12V
1K
R
1K
C2
IN
C1
1N456
15K
OUT
2N404
2N404
12K
33K
+6V

C1 IS EITHER 270pf
OR 560pf UNLESS
NOTED OTHERWISE.

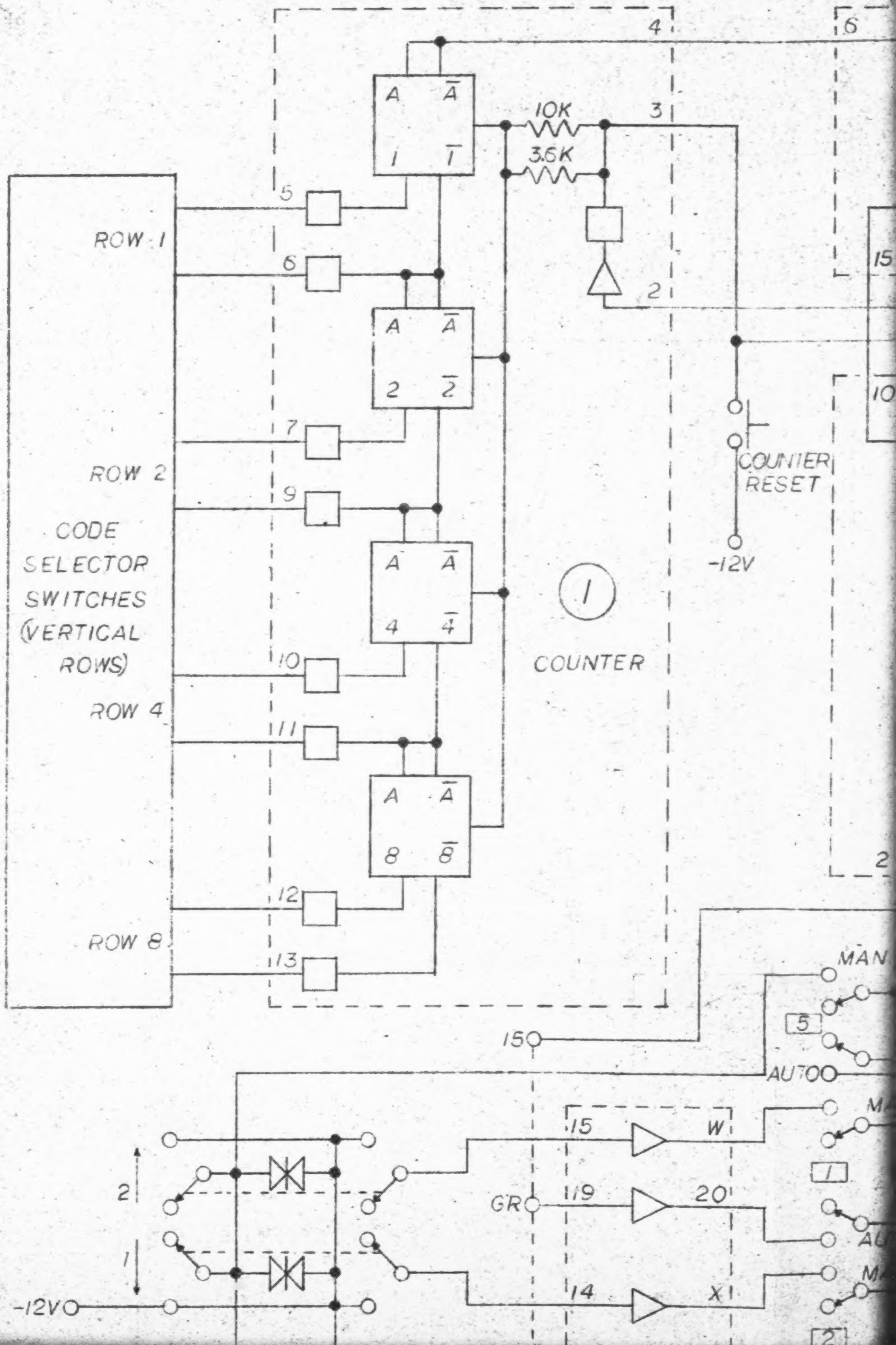
R AND C2 ARE
SHOWN IN EACH
BOX REPRESENTING THIS MONO.

DETAIL FROM
CODE GENERATOR

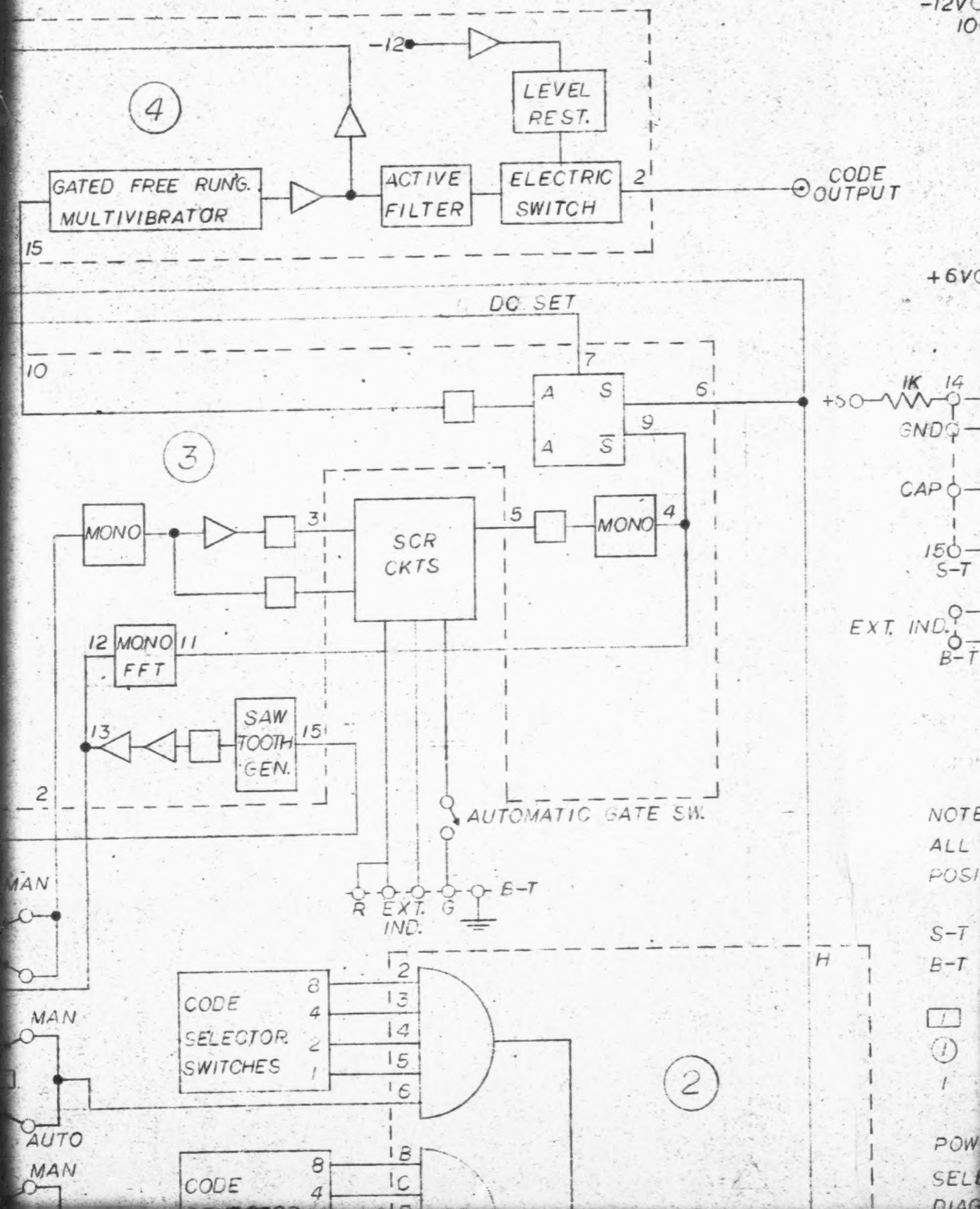


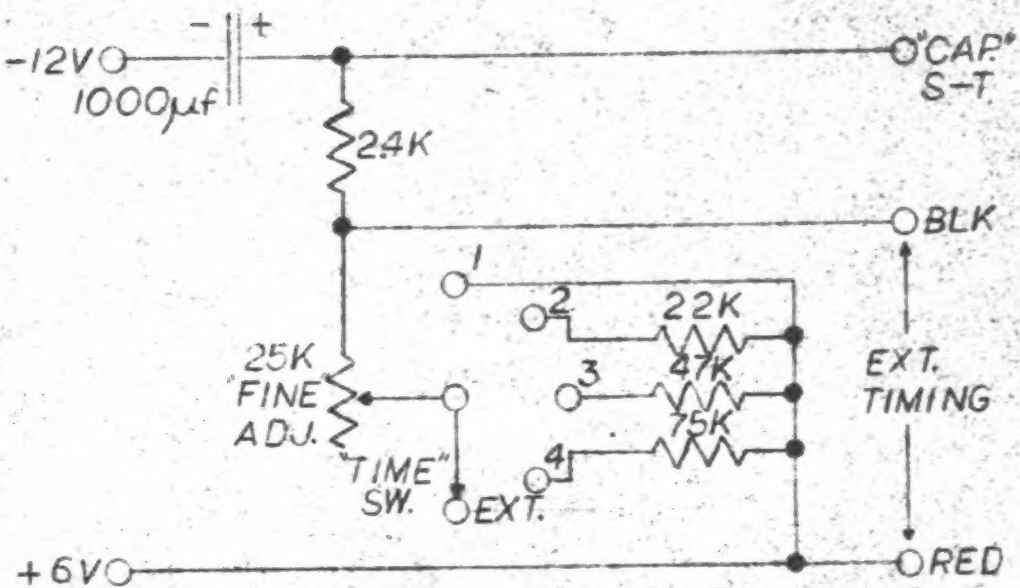
S 1
S 2
6VDC
MASTER CONTROL
PB 1
PB 2
PB 3
PB 4
STUDENT
RESPONSE
STATION
NO. 1
PL_1
STUDENT
RESPONSE
STATION
NO. X
PL_x

FOUR-STATION
STUDENT RESPONSE
UNIT



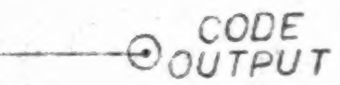
4
6
A
$\overline{A}$
1
$\overline{1}$
10K
3.6K
3
2
15
10
5
6
ROW 1
7
9
ROW 2
A
$\overline{A}$
2
$\overline{2}$
COUNTER RESET
-12V
CODE SELECTOR SWITCHES (VERTICAL ROWS)
A
$\overline{A}$
4
$\overline{4}$
①
COUNTER
10
11
ROW 4
A
$\overline{A}$
8
$\overline{8}$
12
13
ROW 8
2
MAN
5
15
AUTO
MA
2
1
15
W
1
GR
19
20
AU
-12V
14
X
MA
2


④
-12
LEVEL REST.
GATED FREE RUNG. MULTIVIBRATOR
ACTIVE FILTER
ELECTRIC SWITCH
2
CODE OUTPUT
15
DC SET
7
10
A
S
A
S
6
9
③
MONO
3
SCR CKTS
5
MONO
4
12
MONO FFT
11
13
SAW TOOTH GEN.
15
2
AUTOMATIC GATE SW.
MAN
R
EXT. IND.
G
B-T
H
CODE SELECTOR SWITCHES
8
4
2
1
2
3
4
5
6
②
MAN
AUTO
MAN
CODE
8
4
B
C
-12V
10
+6V
+5
1K
14
GND
CAP
15
S-T
EXT. IND.
B-T
NOTE
ALL
POSI
S-T
B-T
1
①
1
POW
SEL
DIAG

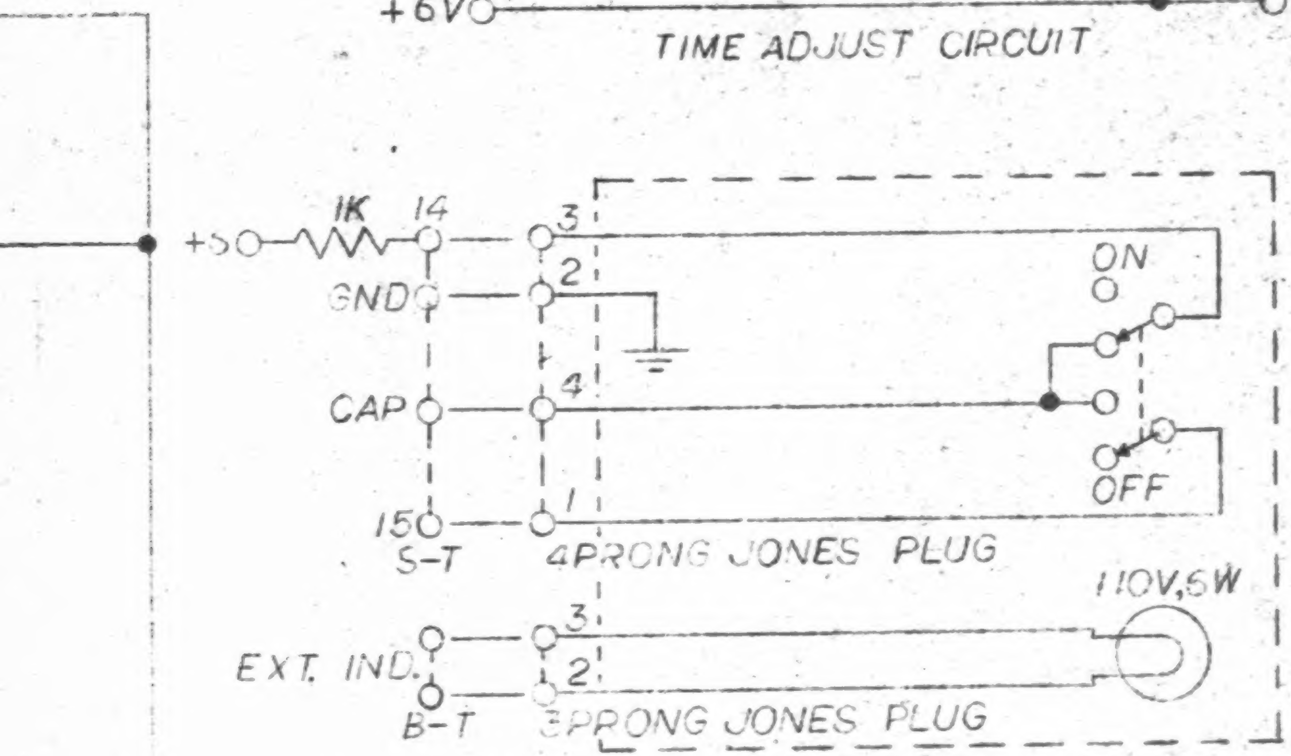


-12V
1000µf
- +
"CAP"
S-T
2.4K
BLK
1
2
22K
3
47K
4
75K
25K
FINE
ADJ.
"TIME"
SW.
EXT.
EXT.
TIMING
+6V
RED

TIME ADJUST CIRCUIT



CODE
OUTPUT



+5
1K
14
GND
CAP
15
S-T
3
2
4
1
4PRONG JONES PLUG
ON
OFF
110V,6W
EXT. IND.
B-T
3
2
3PRONG JONES PLUG

TALK INDICATOR AND REMOTE CONTROL UNIT

NOTES :

ALL SWITCHES ARE DRAWN IN THEIR "OFF" POSITIONS.

S-T SIDE MOUNTED TERMINAL STRIP

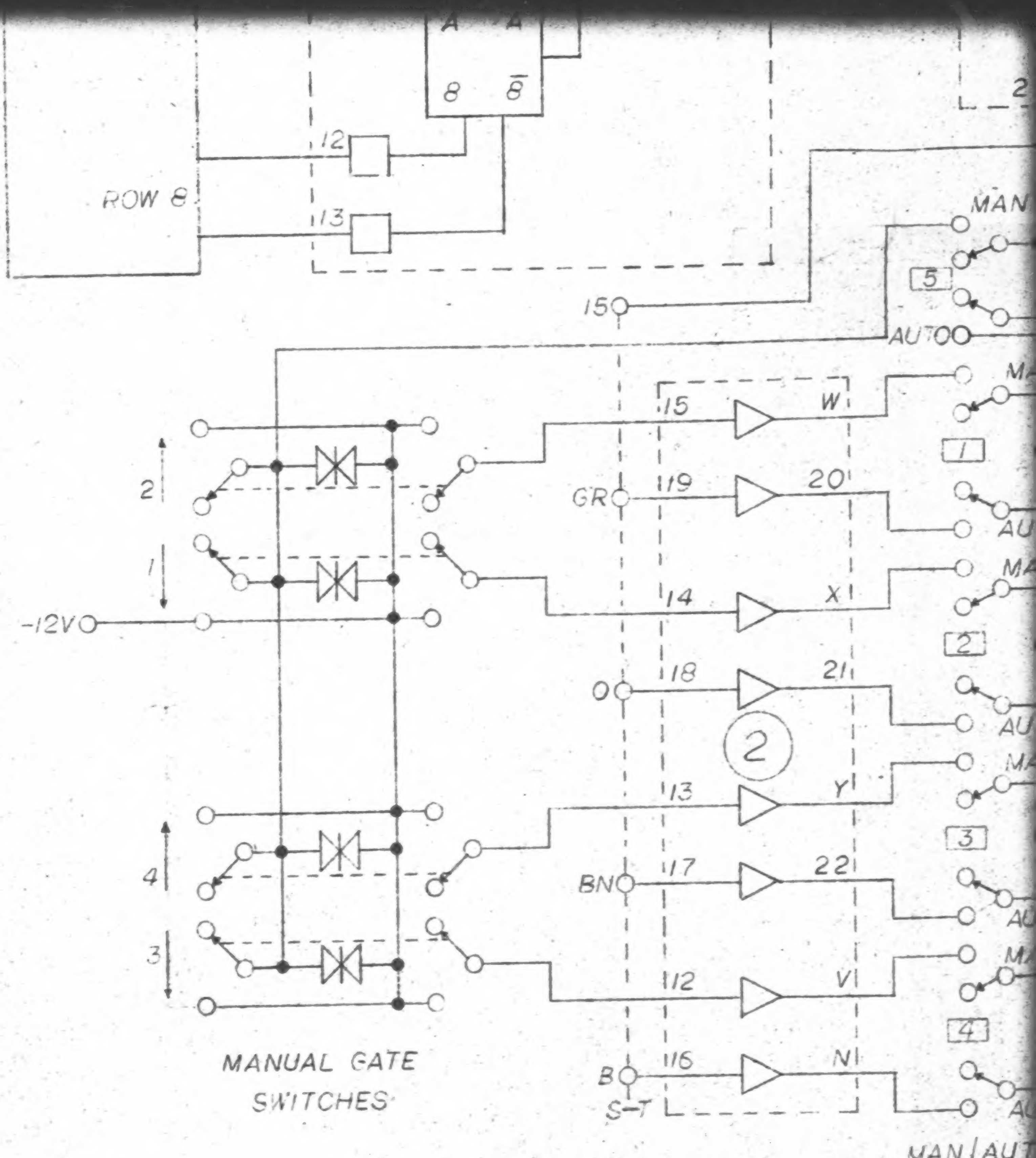
B-T BACK MOUNTED TERMINAL STRIP

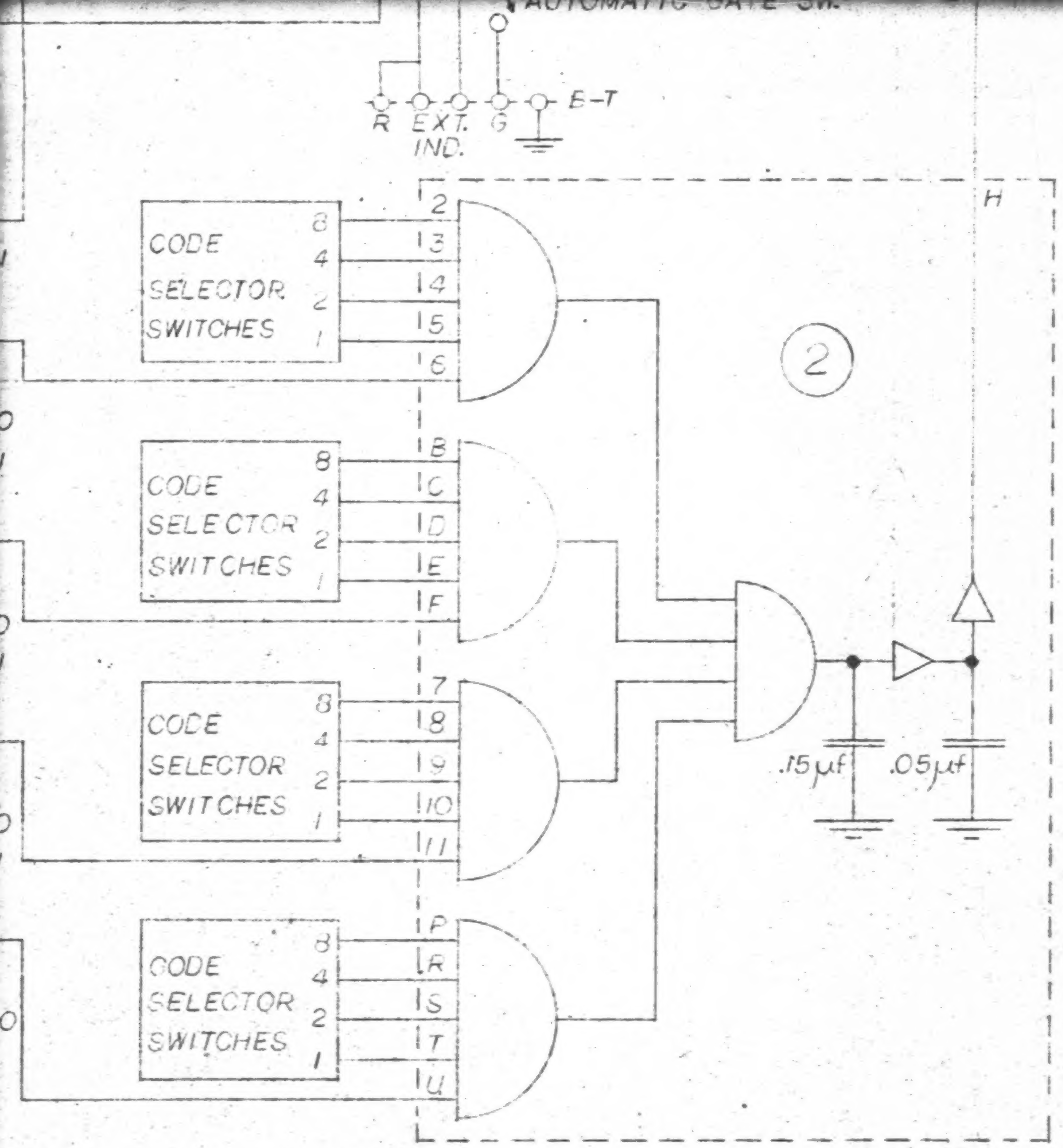
$\boxed{1}$ SWITCH NO., COUNTING FROM THE TOP

① BOARD NO.

1 PIN NO.

POWER SUPPLIES, SCR CKTS, AND CODE SELECTOR SWITCHES APPEAR ON INDIVIDAL DIAGRAMS.


A
A
8
8̄
12
13
ROW 8
2
MAN
5
15
AUTO
MA
15
W
1
2
19
20
GR
AU
1
X
14
-12V
2
0
18
21
2
Y
13
MA
4
3
BN
17
22
3
AU
V
12
4
B
S-T
116
N
MANUAL GATE SWITCHES
MAN/AUT
SELECTOR


AUTOMATIC GATE SW.
R
EXT. IND.
G
E-T
CODE SELECTOR SWITCHES
8
4
2
1
2
3
4
5
6
CODE SELECTOR SWITCHES
8
4
2
1
B
C
D
E
F
CODE SELECTOR SWITCHES
8
4
2
1
7
8
9
10
11
CODE SELECTOR SWITCHES
8
4
2
1
P
R
S
T
U
H
②
.15µf
.05µf

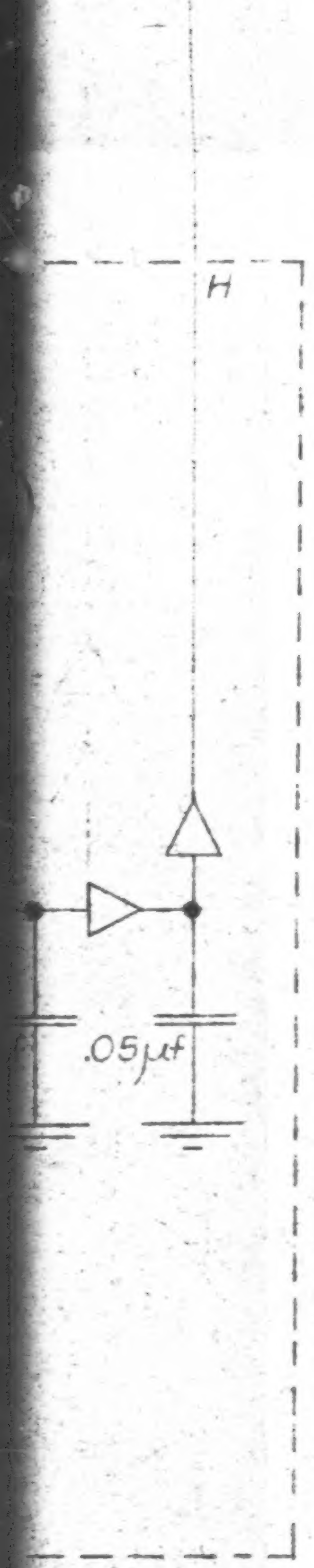
NOTES:

ALL SWITC
POSITIONS

S-T SIDE
B-T BACK

1 SWITC
① BOAR
1 PIN N

POWER SU
SELECTOR
DIAGRAMS.



NOTES:

ALL SWITCHES ARE DRAWN IN THEIR "OFF" POSITIONS.

S-T SIDE MOUNTED TERMINAL STRIP
B-T BACK MOUNTED TERMINAL STRIP

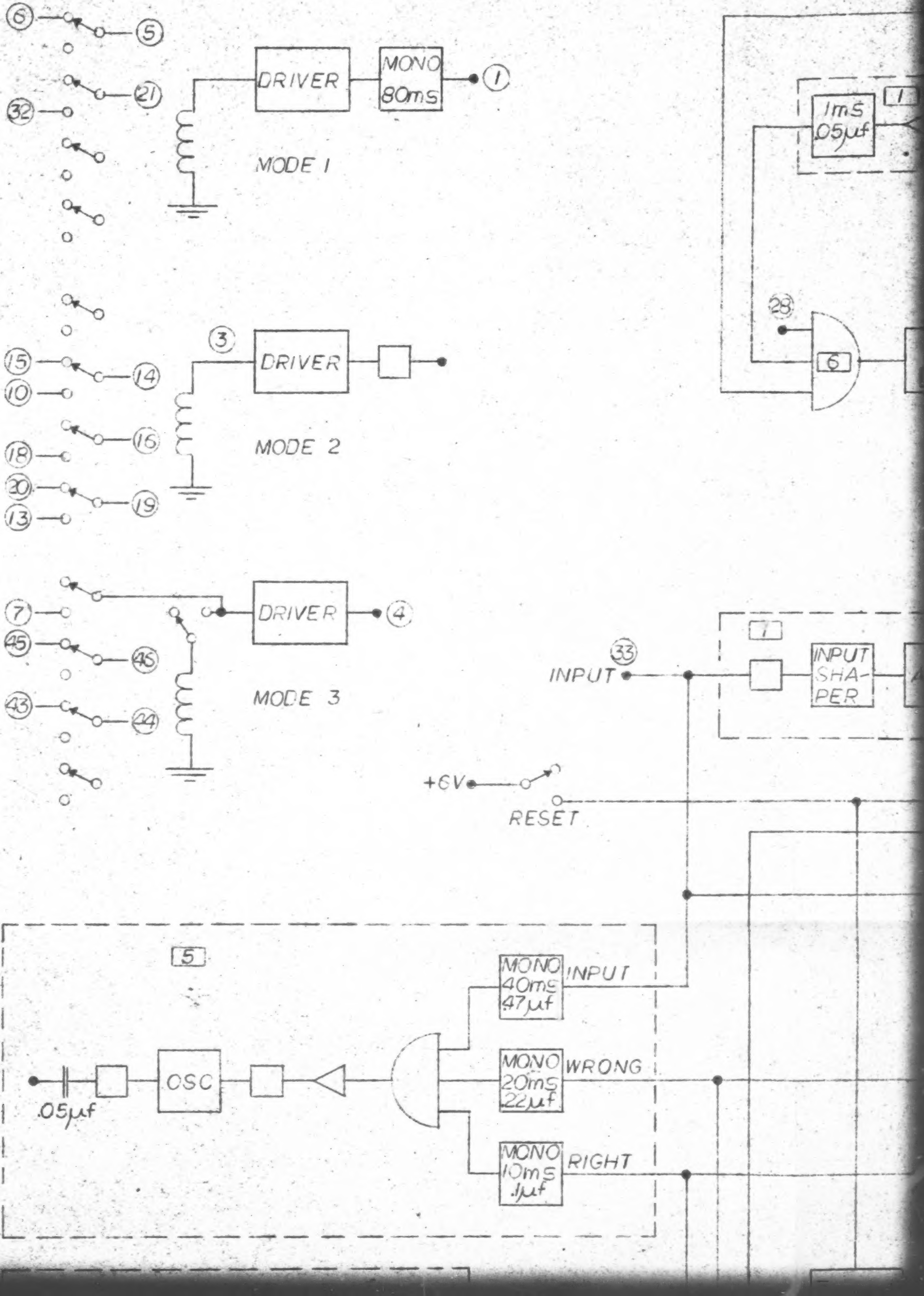
$\boxed{1}$ SWITCH NO., COUNTING FROM THE TOP
① BOARD NO.
1 PIN NO.

POWER SUPPLIES, SCR CKTS, AND CODE SELECTOR SWITCHES APPEAR ON INDIVIDAL DIAGRAMS.

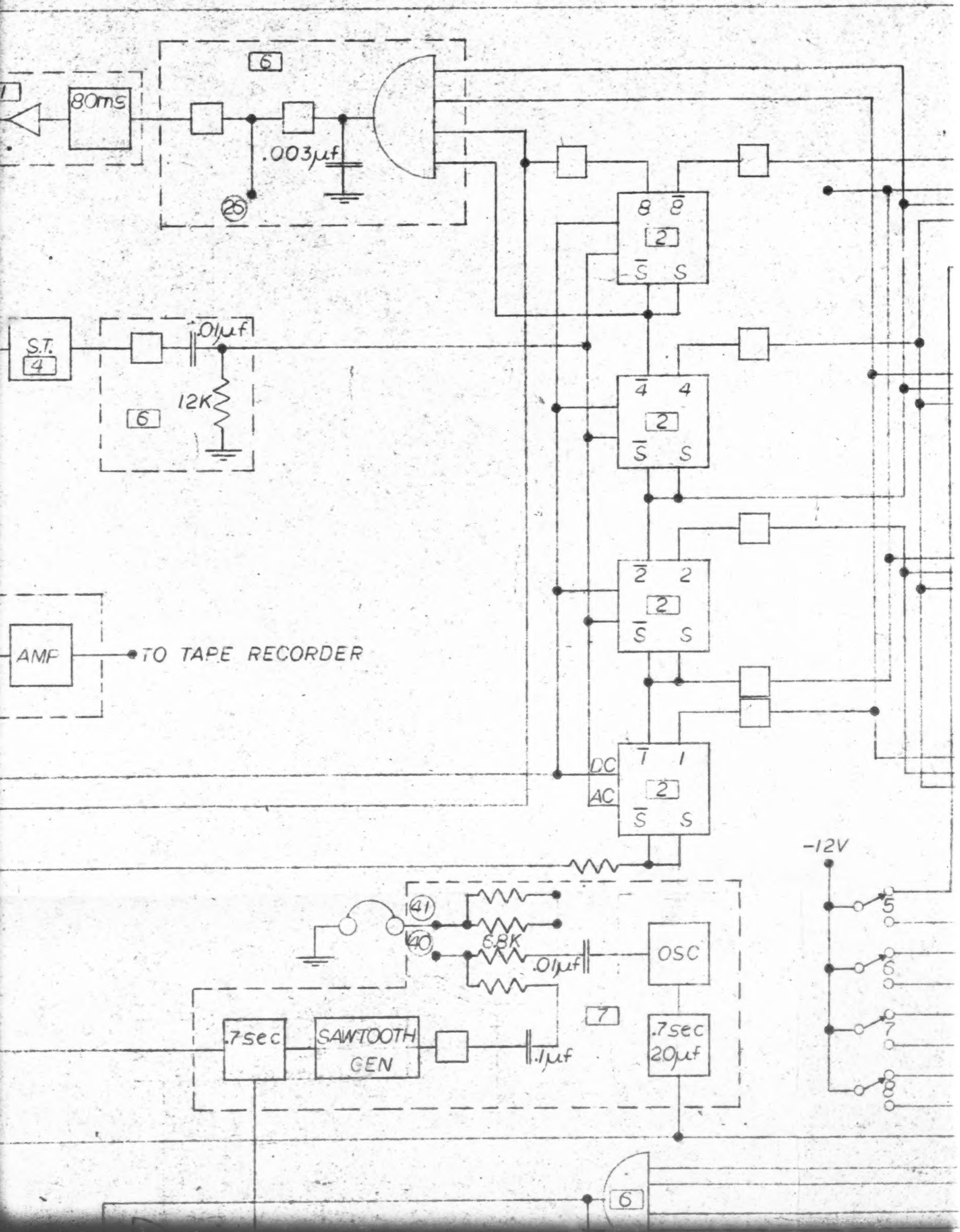
CODE GENERATOR

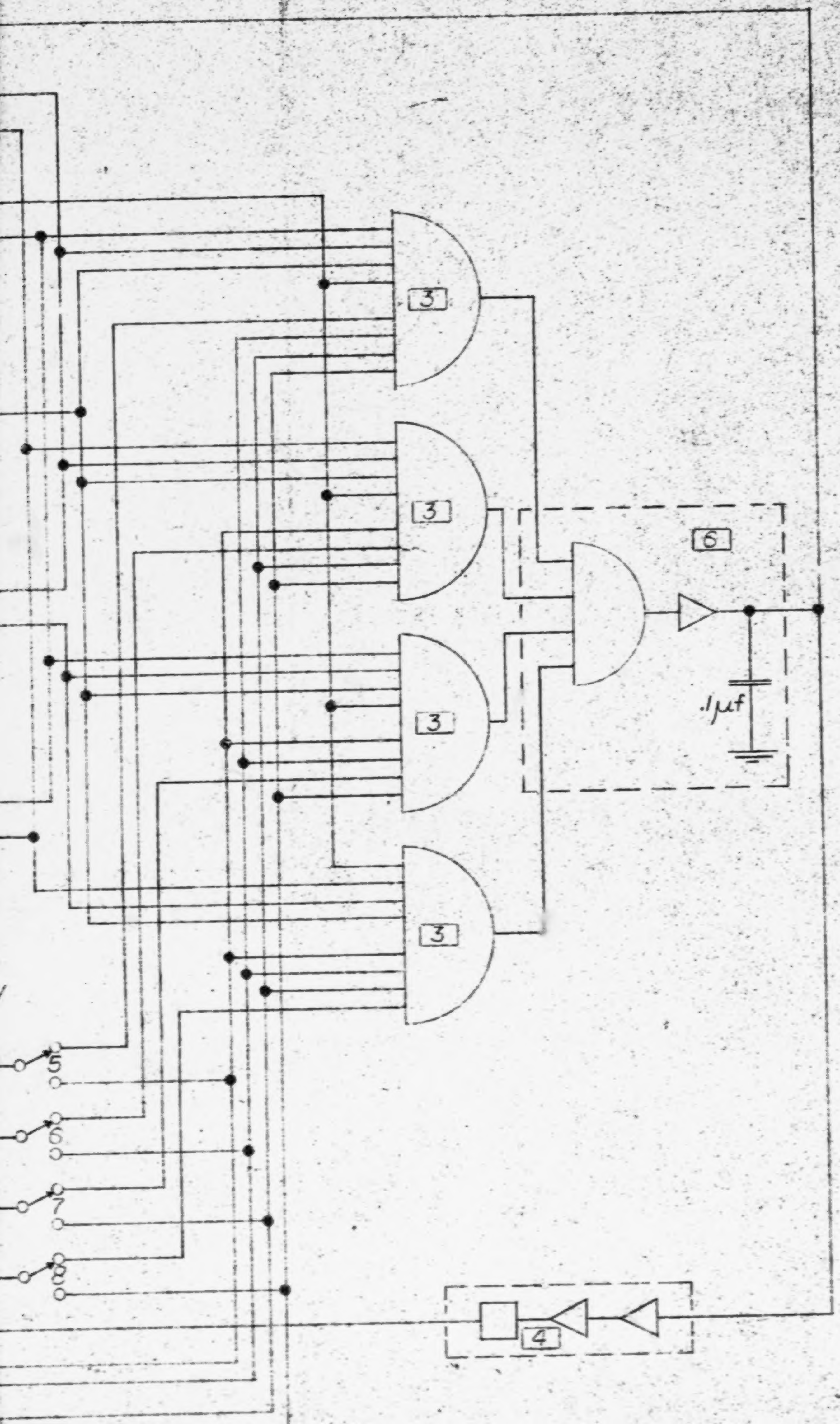
DESIGNED BY J.A. BOEHM
DRAWN BY MMK 6-22-67
CHCKD BY

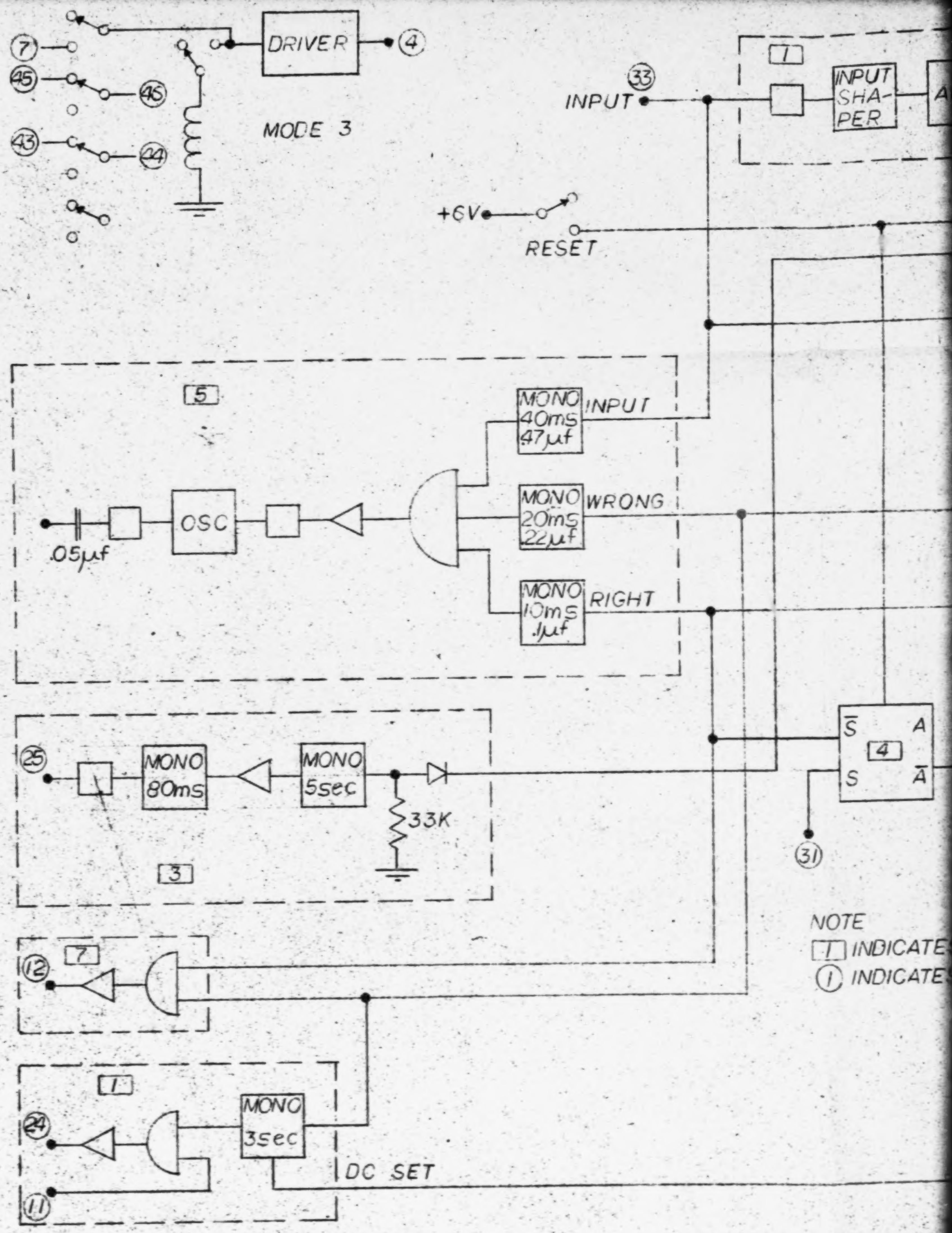
SPEECH AND HEARING DEPT.
AT
NEW MEXICO STATE UNIVERSITY



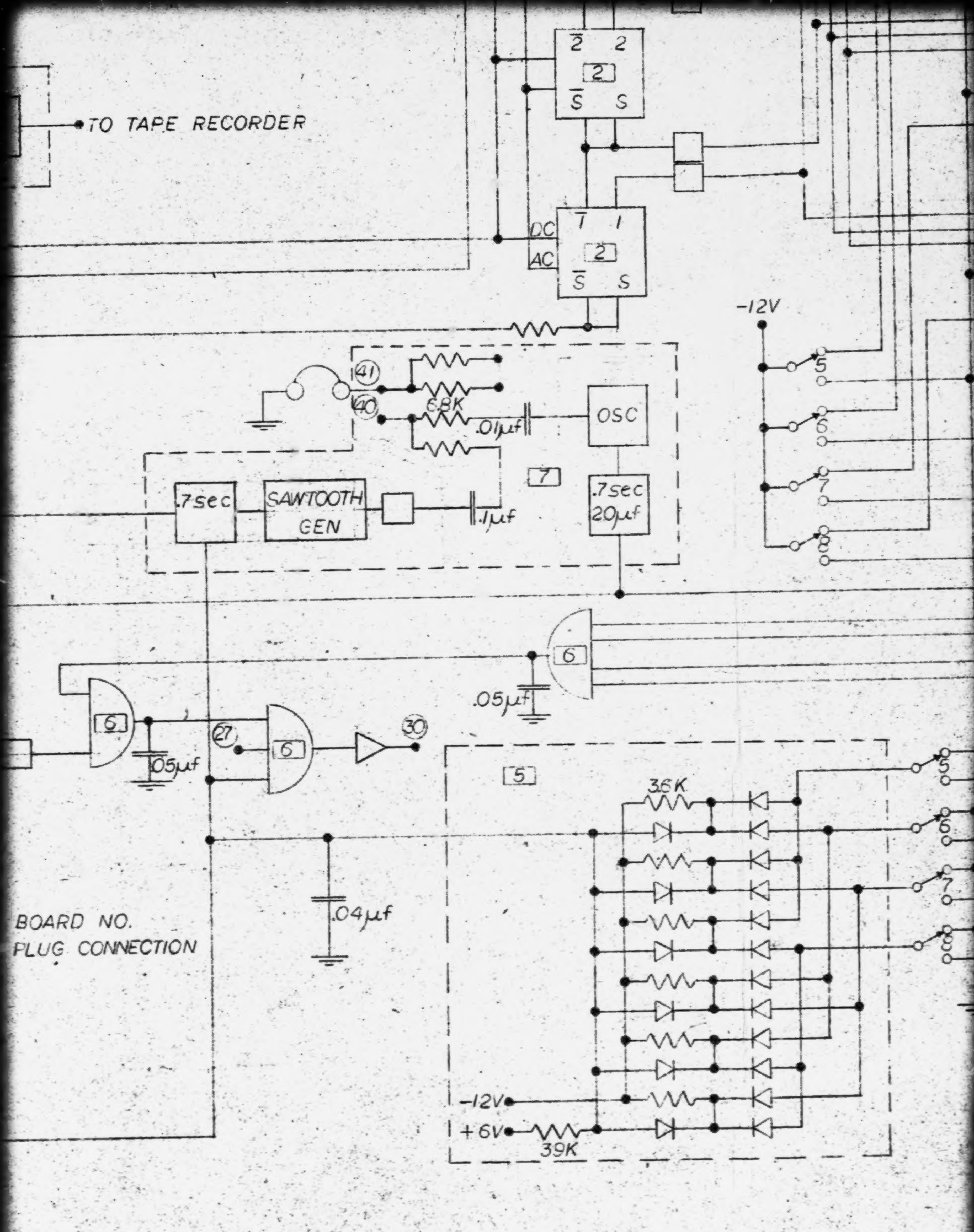
6
5
21
32
DRIVER
MONO
80ms
1
MODE 1
15
14
10
16
18
20
19
13
3
DRIVER
MODE 2
7
45
46
43
44
DRIVER
4
MODE 3
1ms
.05µf
1
28
6
7
33
INPUT
INPUT SHA-PER
+6V
RESET
5
MONO 40ms 47µf
INPUT
MONO 20ms 22µf
WRONG
MONO 10ms .1µf
RIGHT
OSC
.05µf

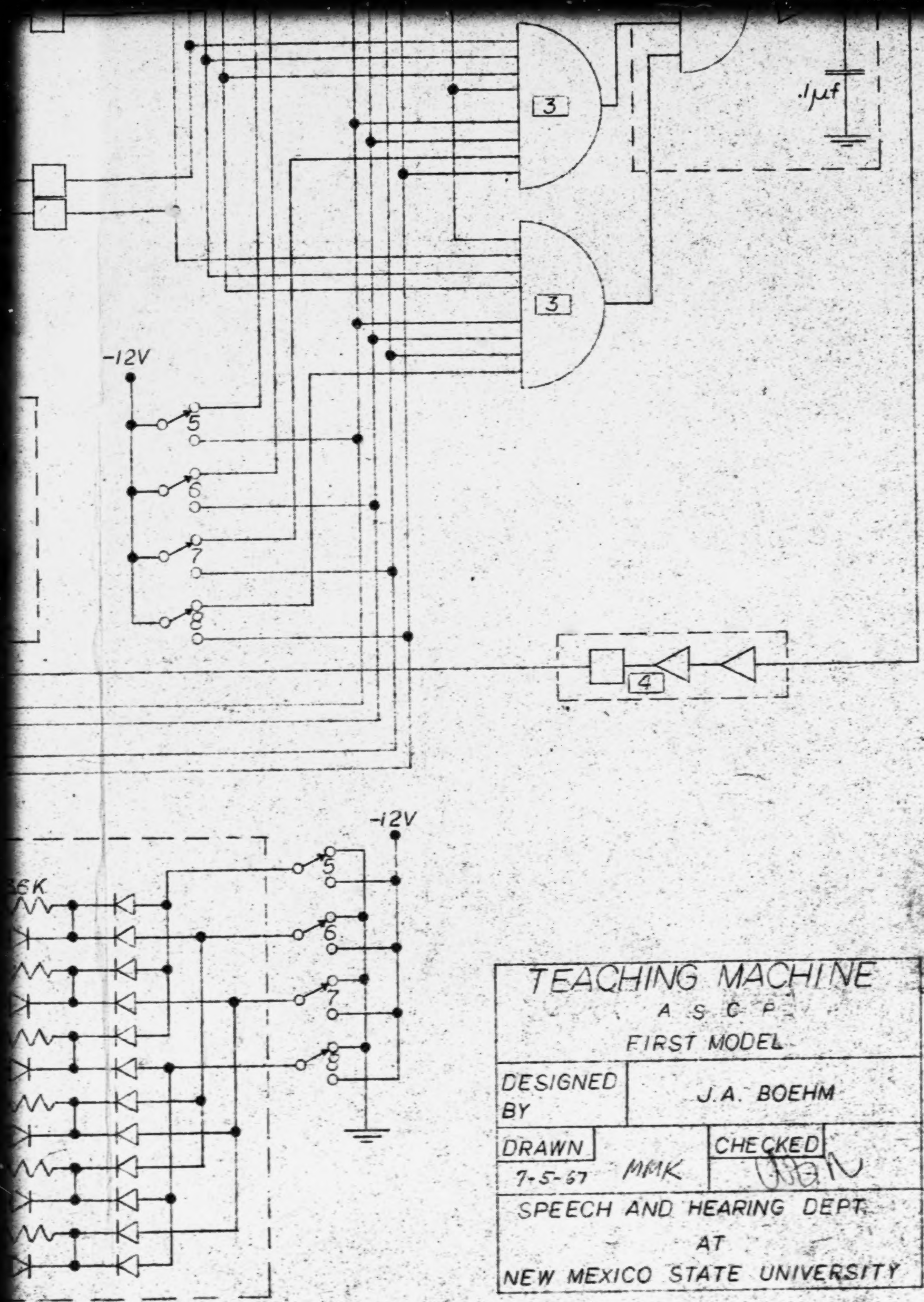

80ms
6
.003μf
26
8
8̄
2
S̄
S
S.T.
4
.01μf
12K
6
4̄
4
2
S̄
S
2̄
2
2
S̄
S
AMP
TO TAPE RECORDER
1̄
1
DC
AC
2
S̄
S
-12V
41
40
6.8K
.01μf
OSC
5
6
7
8
7
.7sec
SAWTOOTH GEN
.1μf
.7sec 20μf
6


.1μf



7
45
46
43
24
DRIVER
4
MODE 3
33
INPUT
1
INPUT SHA-PER
A
+6V
RESET
5
MONO 40ms 47μf
INPUT
OSC
.05μf
MONO 20ms 22μf
WRONG
MONO 10ms .1μf
RIGHT
25
MONO 80ms
MONO 5sec
33K
3
S̄
A
4
S
Ā
31
NOTE
1 INDICATES
1 INDICATES
7
12
1
24
MONO 3sec
DC SET
11


TO TAPE RECORDER
2̄ 2
2
S̄ S
DC
AC
T̄ 1
2
S̄ S
-12V
5
6
7
8
41
40
6.8K
.01µf
OSC
7
.7sec
SAWTOOTH GEN
.1µf
.7sec 20µf
6
.05µf
6
.05µf
27
6
30
5
3.6K
5
6
7
8
.04µf
-12V
+6V
39K
BOARD NO.
PLUG CONNECTION


.1µf
3
3
-12V
5
6
7
8
4
-12V
36K
5
6
7
8

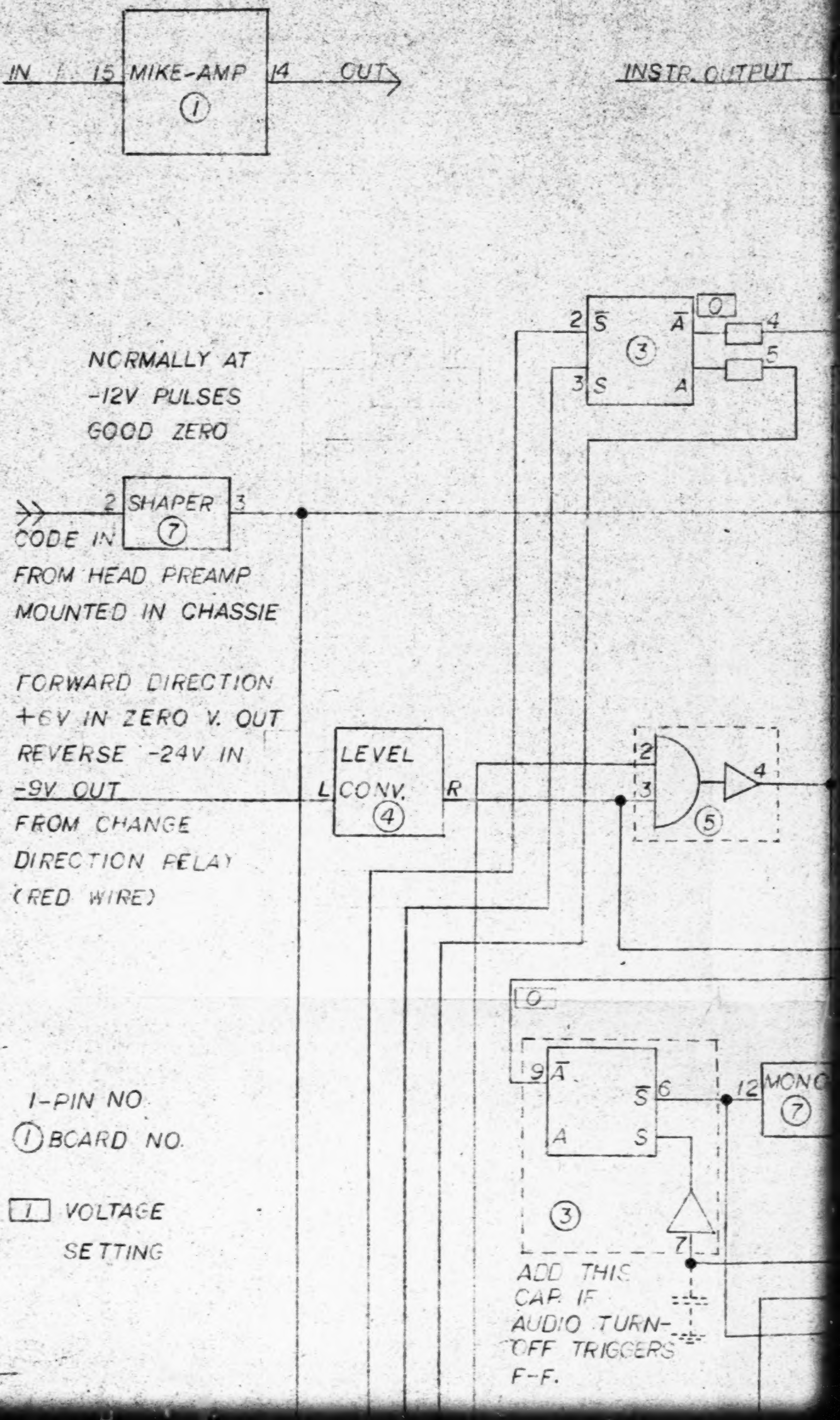
TEACHING MACHINE
A S C P
FIRST MODEL

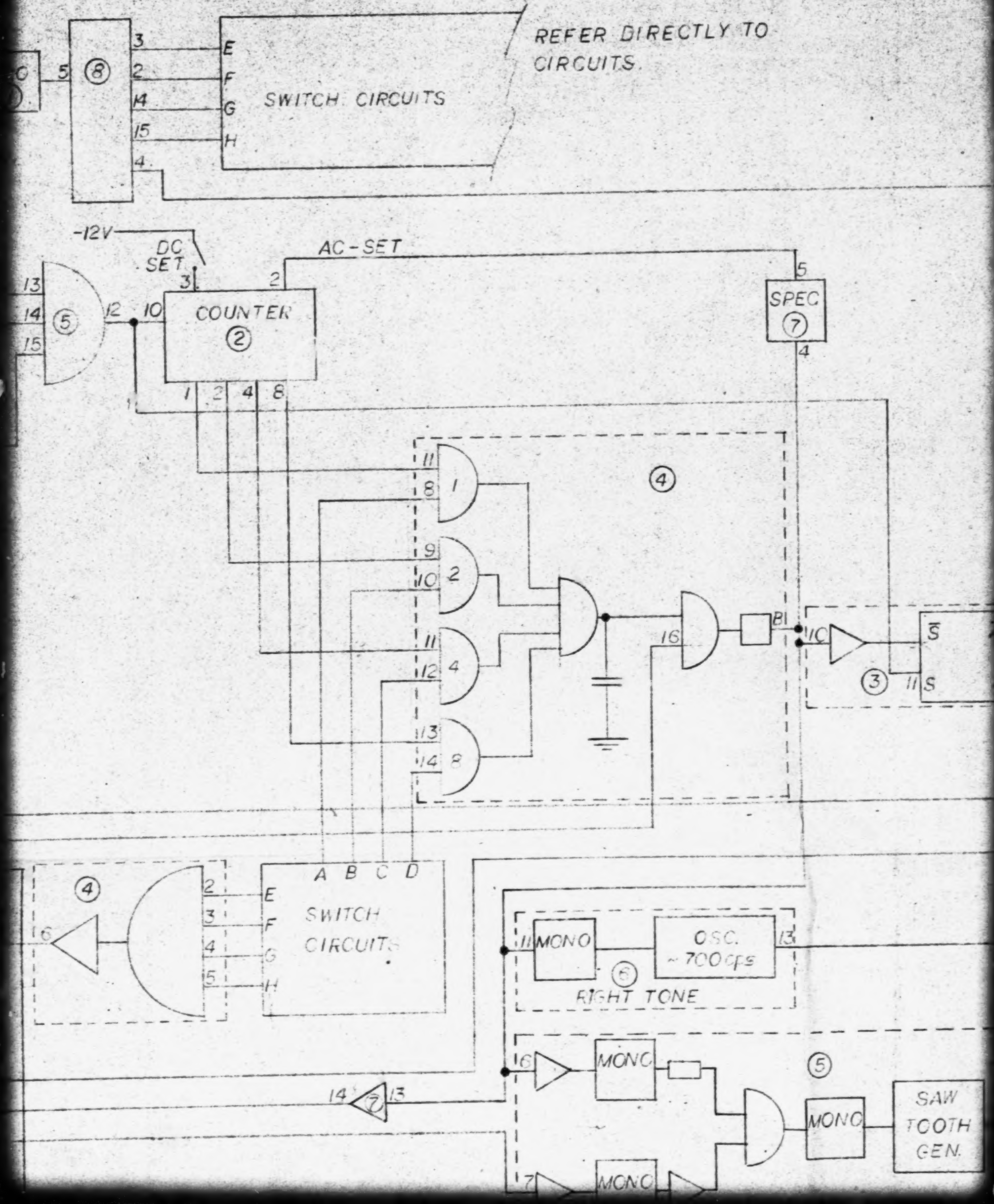
DESIGNED BY J.A. BOEHM

DRAWN 7-5-67 MMK

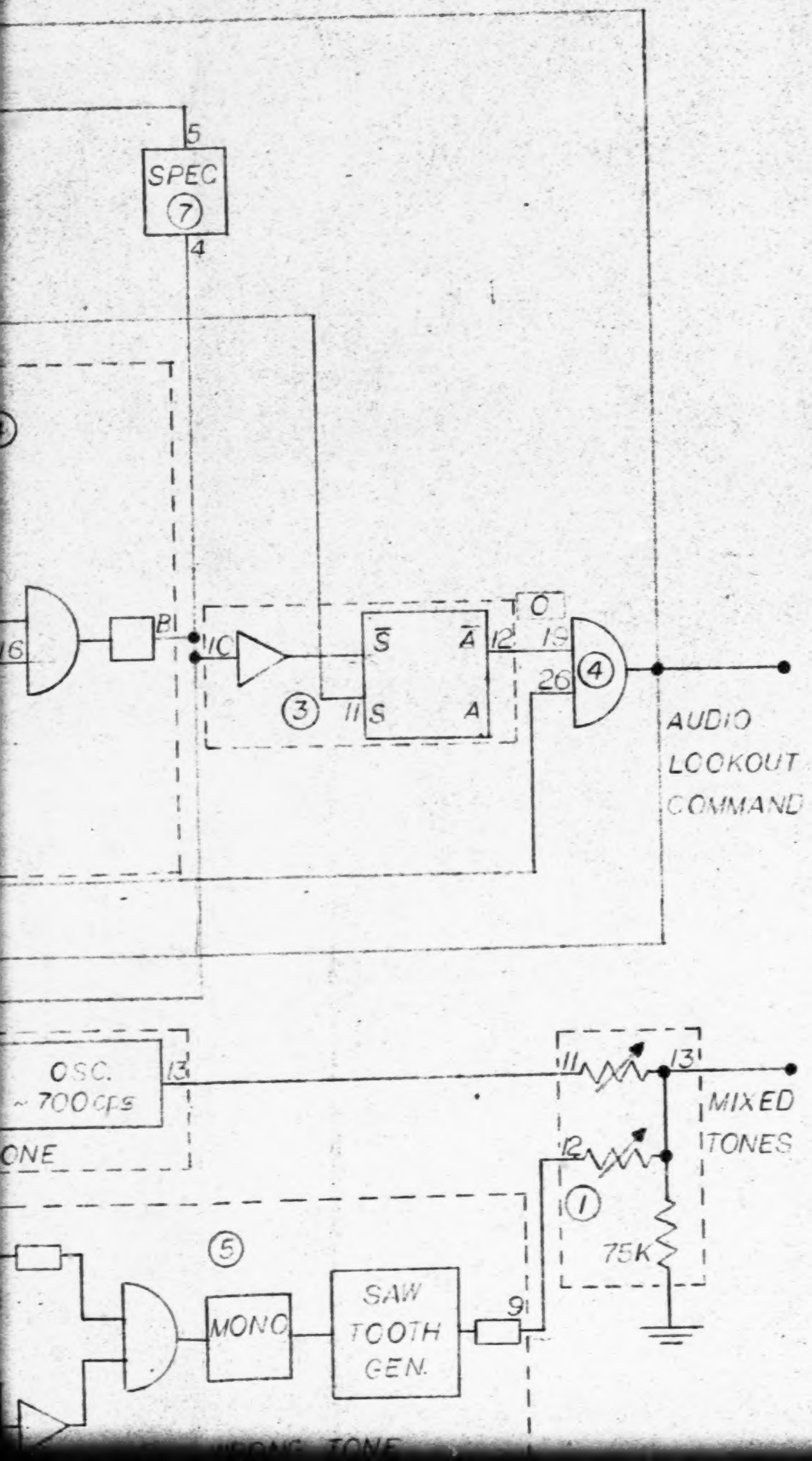
CHECKED

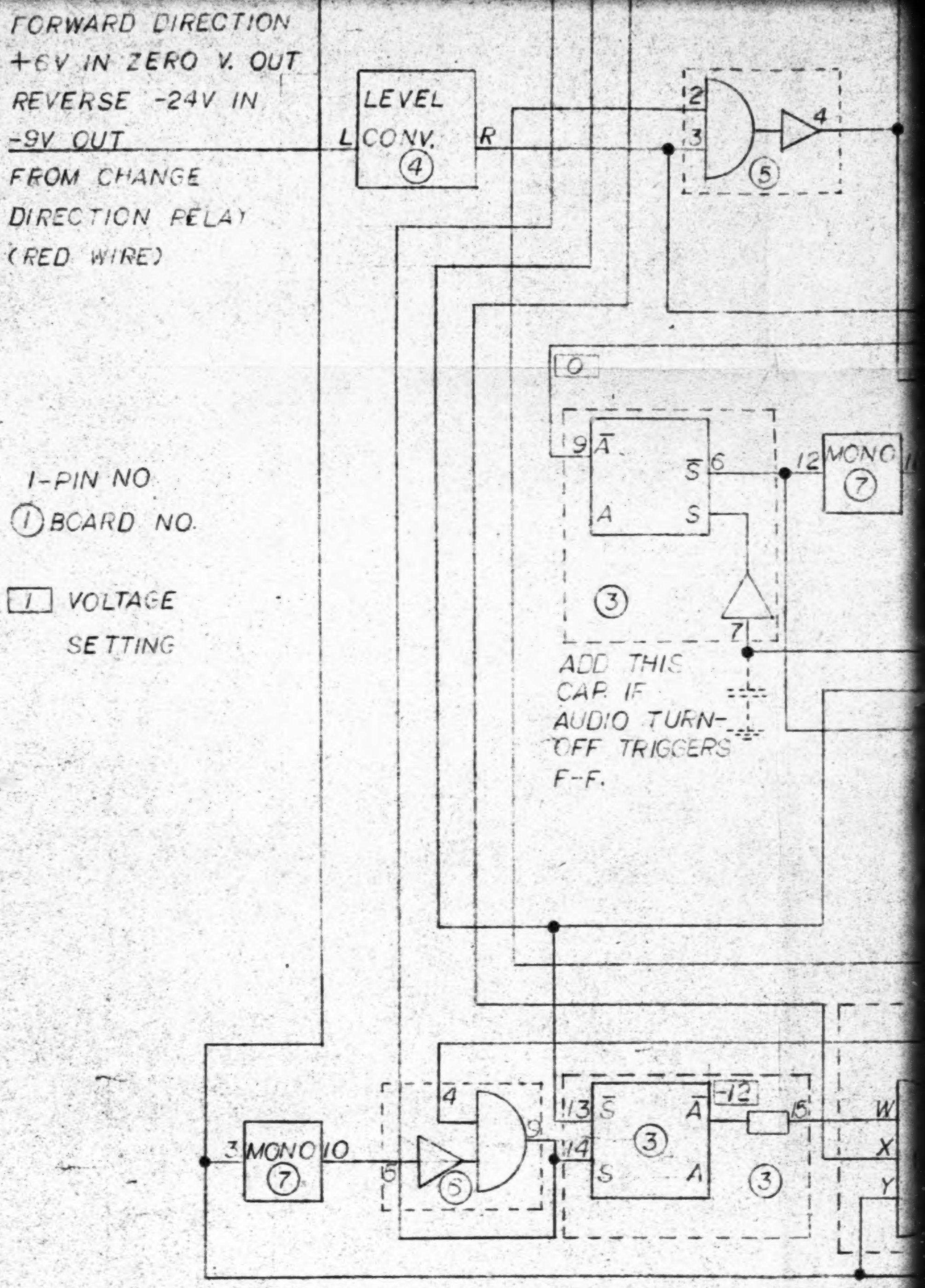
SPEECH AND HEARING DEPT
AT
NEW MEXICO STATE UNIVERSITY

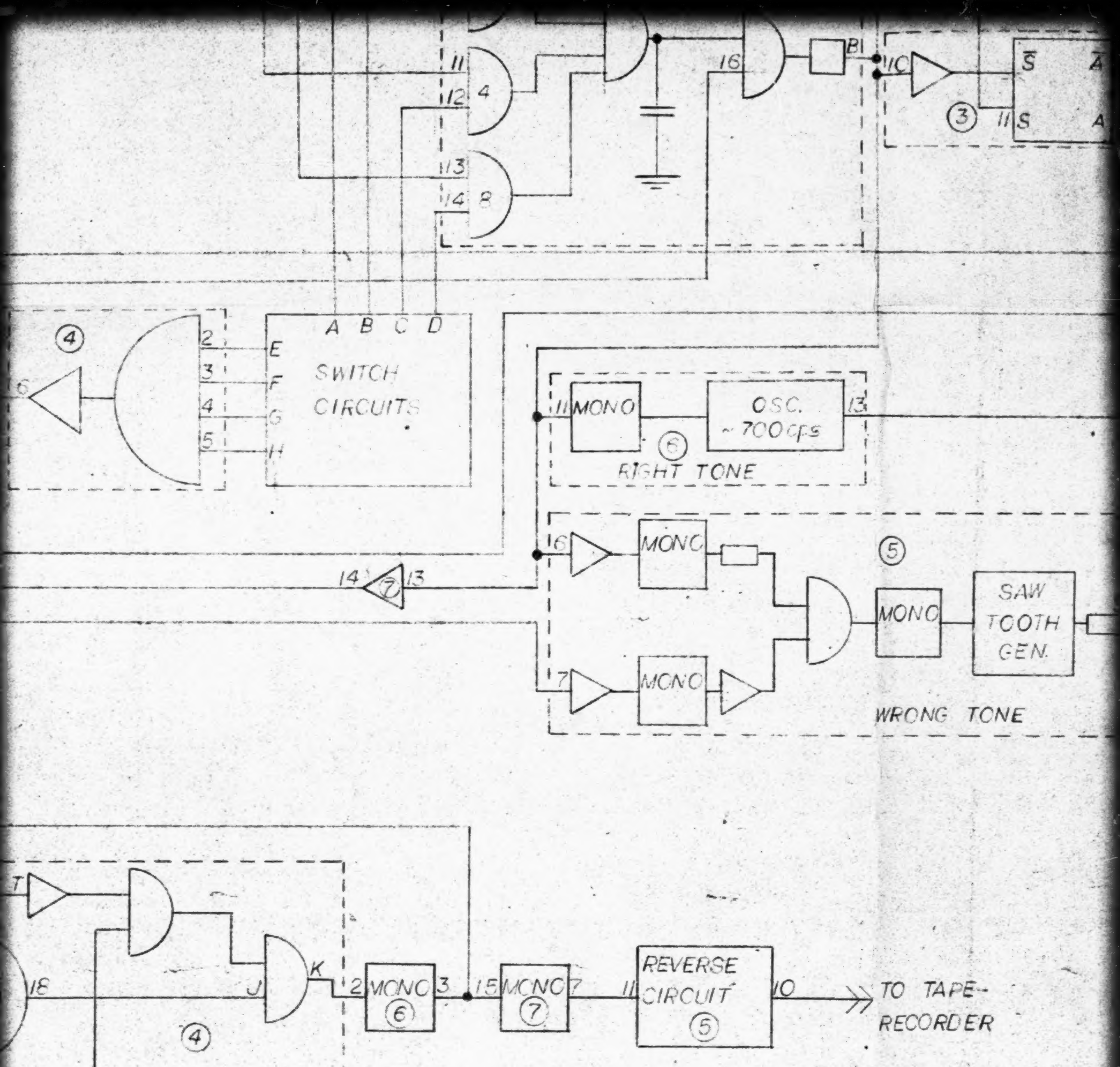

IN
15
MIKE-AMP
①
14
OUT
INSTR. OUTPUT
2 S̄
Ā
3 S
A
③
0
4
5
NORMALLY AT
-12V PULSES
GOOD ZERO
2
SHAPER
⑦
3
CODE IN
FROM HEAD PREAMP
MOUNTED IN CHASSIE
FORWARD DIRECTION
+6V IN ZERO V. OUT
REVERSE -24V IN
-9V OUT
FROM CHANGE
DIRECTION RELAY
(RED WIRE)
L
LEVEL
CONV.
④
R
2
3
4
⑤
0
9 Ā
A
S̄ 6
S
③
7
12
MONO
⑦
ADD THIS
CAP. IF
AUDIO TURN-
OFF TRIGGERS
F-F.
1-PIN NO.
① BOARD NO.
1 VOLTAGE
SETTING

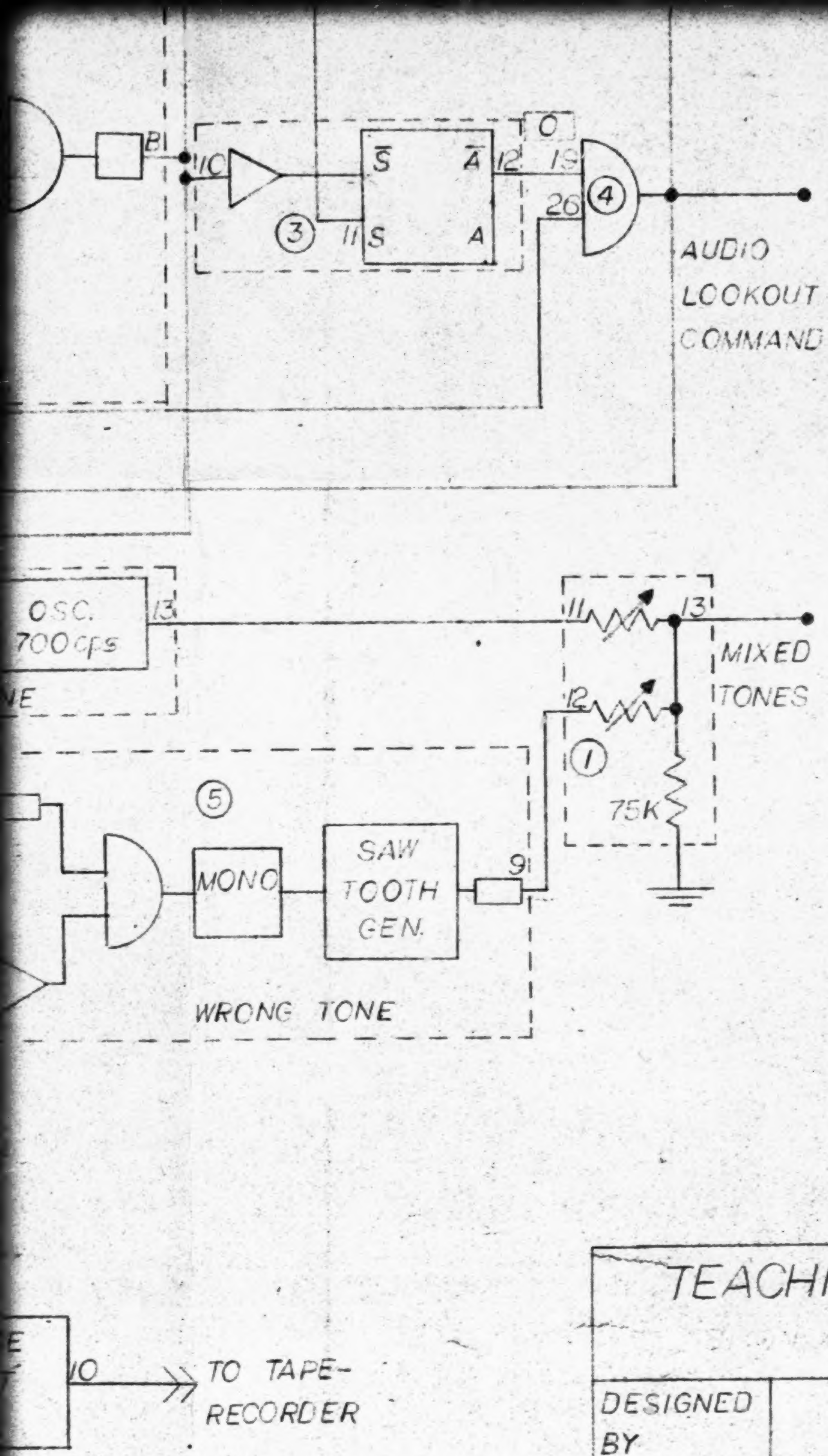

REFER DIRECTLY TO CIRCUITS.
SWITCH CIRCUITS
E
F
G
H
-12V
DC SET
AC-SET
COUNTER
SPEC
S̄
11 S
E
F
G
H
SWITCH CIRCUITS
A
B
C
D
MONO
OSC. ~700 cps
RIGHT TONE
MONO
MONO
SAW TOOTH GEN.
MONO

ECTLY TO


5
SPEC
7
4
16
B
1C
S̄
Ā
12
O
19
26
4
3
11 S
A
AUDIO
LOOKOUT
COMMAND
OSC.
~700 cps
13
ONE
11
13
MIXED
TONES
12
1
75K
5
MONO
SAW
TOOTH
GEN.
9
TONE


FORWARD DIRECTION
+6V IN ZERO V. OUT
REVERSE -24V IN
-9V OUT
FROM CHANGE
DIRECTION RELAY
(RED WIRE)
LEVEL CONV. ④
L
R
2
3
4
⑤
0
9 A̅
A
S̅ 6
S
③
7
12 MONO ⑦
ADD THIS CAP IF AUDIO TURN-OFF TRIGGERS F-F.
1-PIN NO
① BOARD NO.
1 VOLTAGE SETTING
3 MONO 10 ⑦
5
⑥
4
9
13 S̅
14 S
A̅
A
③
-12
15
③
W
X
Y


11
12
4
13
14
8
16
B1
10
S̄
Ā
③
11
S
A
④
6
2
3
4
5
E
F
G
H
A
B
C
D
SWITCH CIRCUITS
11
MONO
OSC. ~700cps
13
⑥
RIGHT TONE
6
MONO
⑤
14
⑦
13
MONO
SAW TOOTH GEN.
7
MONO
WRONG TONE
T
18
J
K
④
2
MONO ⑥
3
15
MONO ⑦
7
11
REVERSE CIRCUIT ⑤
10
TO TAPE-RECORDER

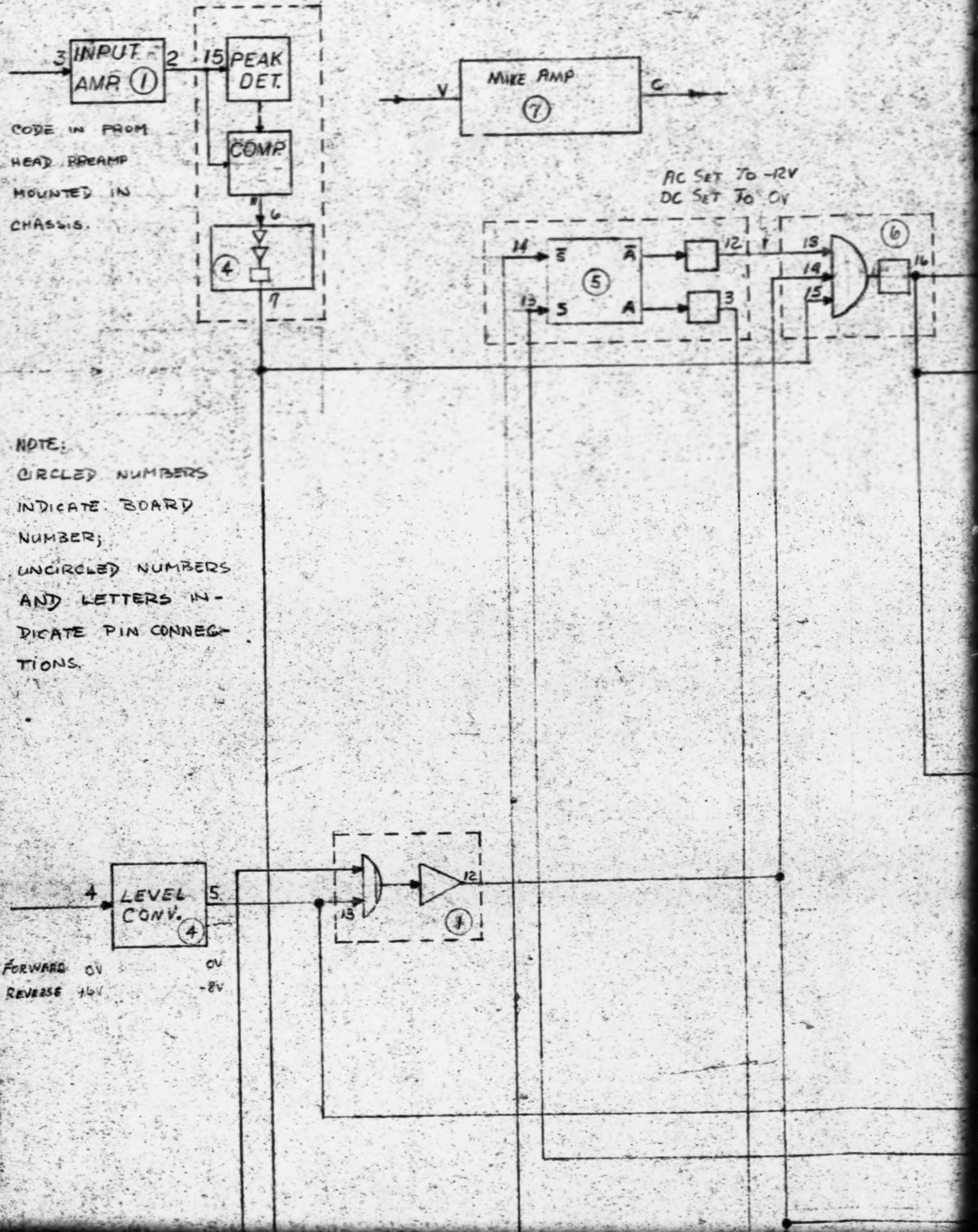

B1
10
③
11
S
S̄
Ā
A
12
O
19
26
④
AUDIO
LOOKOUT
COMMAND
OSC.
700 cps
NE
13
11
12
13
①
75K
MIXED
TONES
⑤
MONO
SAW
TOOTH
GEN.
9
WRONG TONE
E
10
TO TAPE-
RECORDER

TEACHING MACHINE

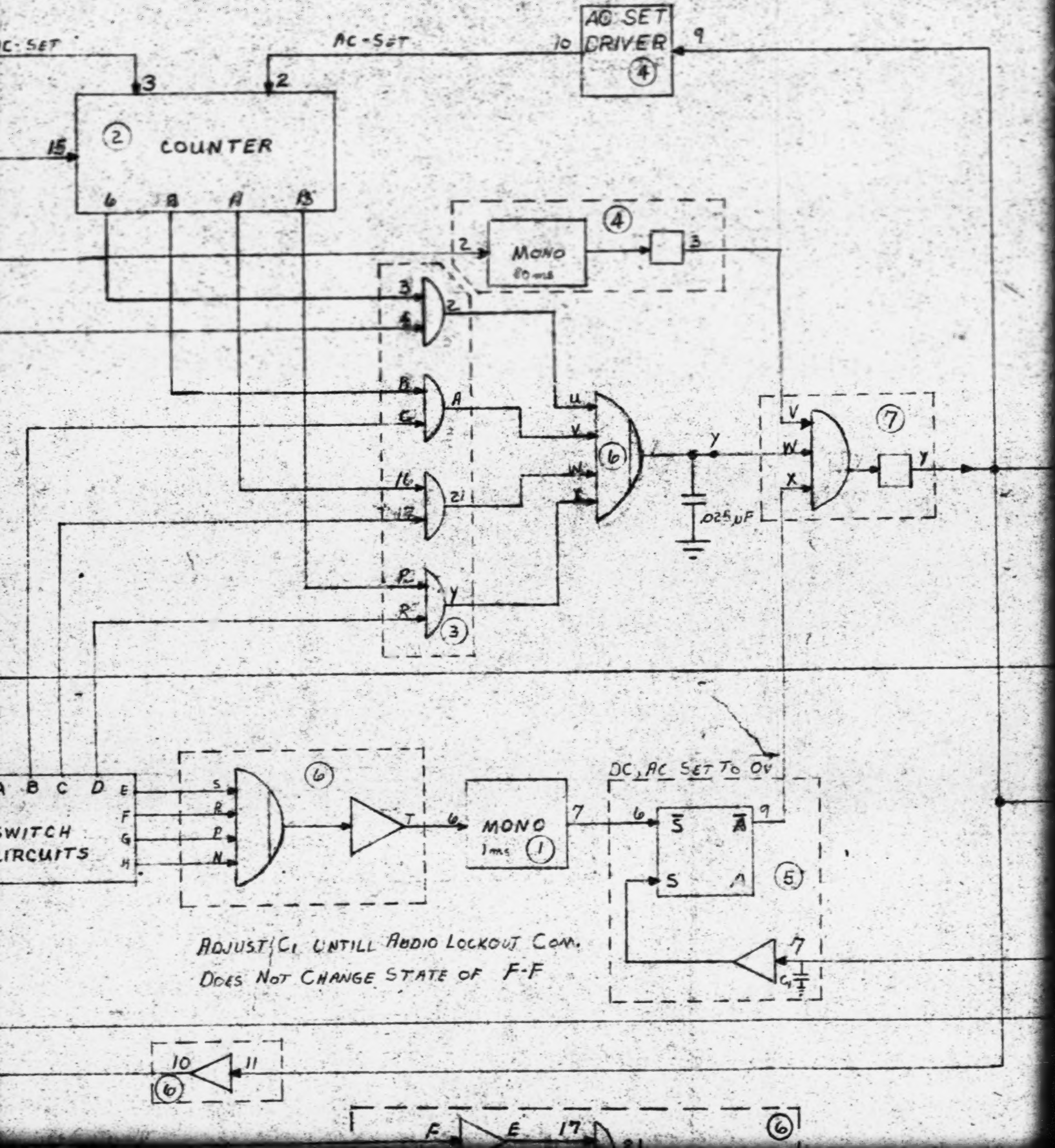
A S C S

DESIGNED BY	J.A. BOEHM		
DRAWN BY	MMK	CHKD BY	

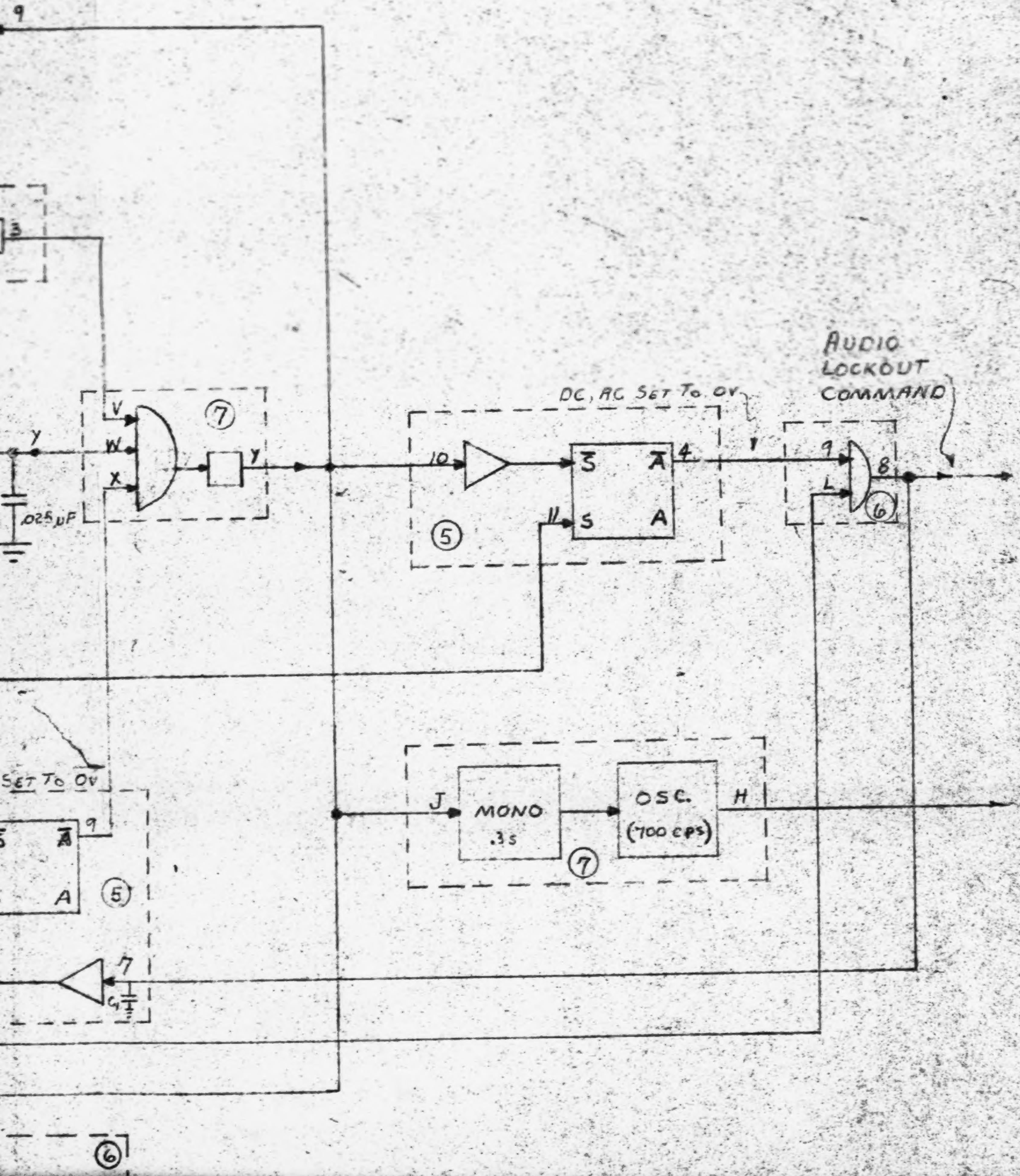
SPEECH AND HEARING DEPT.
AT
NEW MEXICO STATE UNIVERSITY


3
INPUT
AMP ①
2
15
PEAK
DET.
COMP.
6
④
7
CODE IN FROM
HEAD PREAMP
MOUNTED IN
CHASSIS.
V
MIKE AMP
⑦
C
AC SET TO -12V
DC SET TO 0V
14
S̄
Ā
⑤
13
S
A
12
3
⑥
13
14
15
16
4
LEVEL
CONV.
④
5
12
13
④
FORWARD 0V
REVERSE +6V
0V
-8V

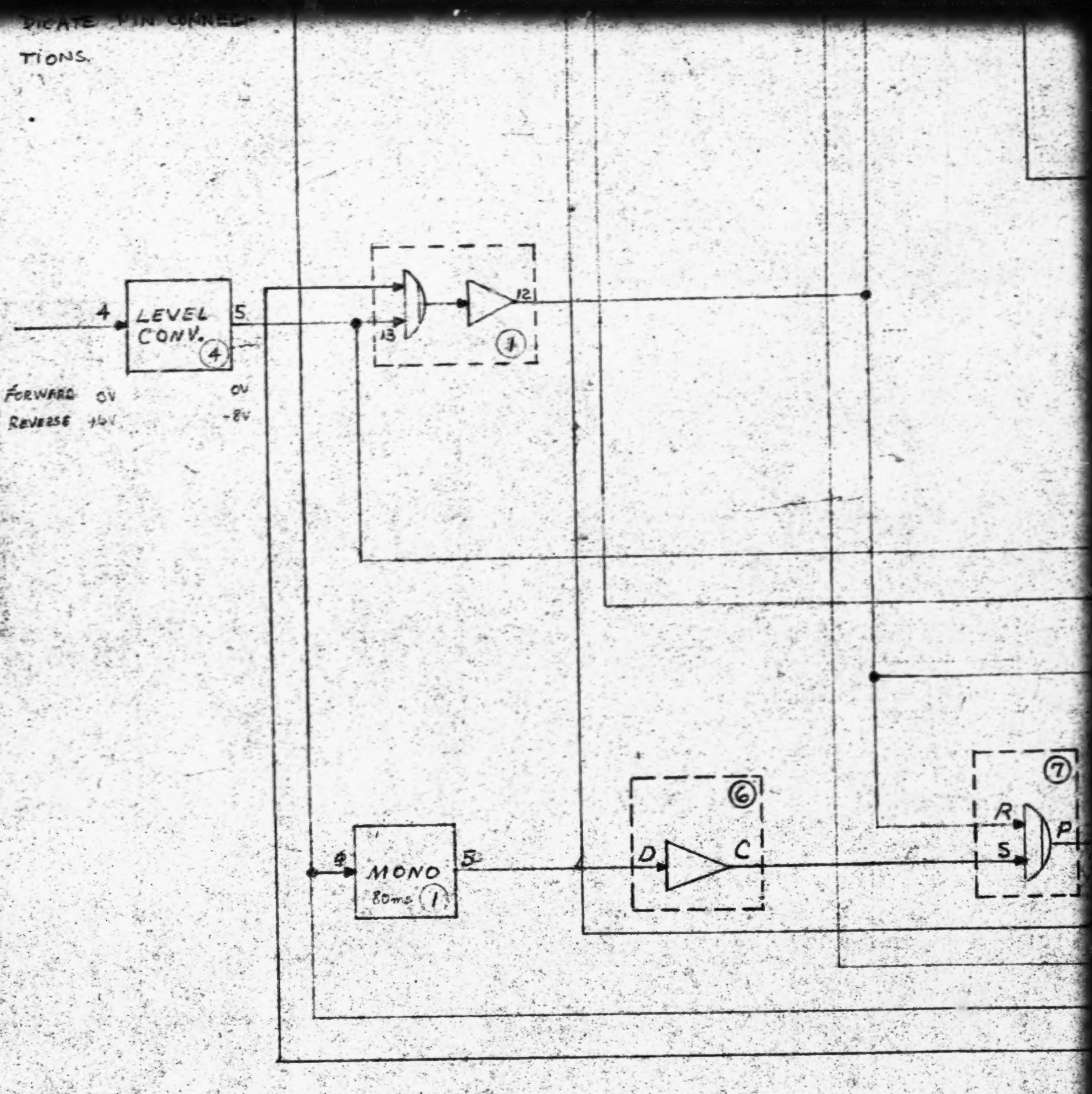
NOTE:
CIRCLED NUMBERS
INDICATE BOARD
NUMBER;
UNCIRCLED NUMBERS
AND LETTERS IN-
DICATE PIN CONNEC-
TIONS.

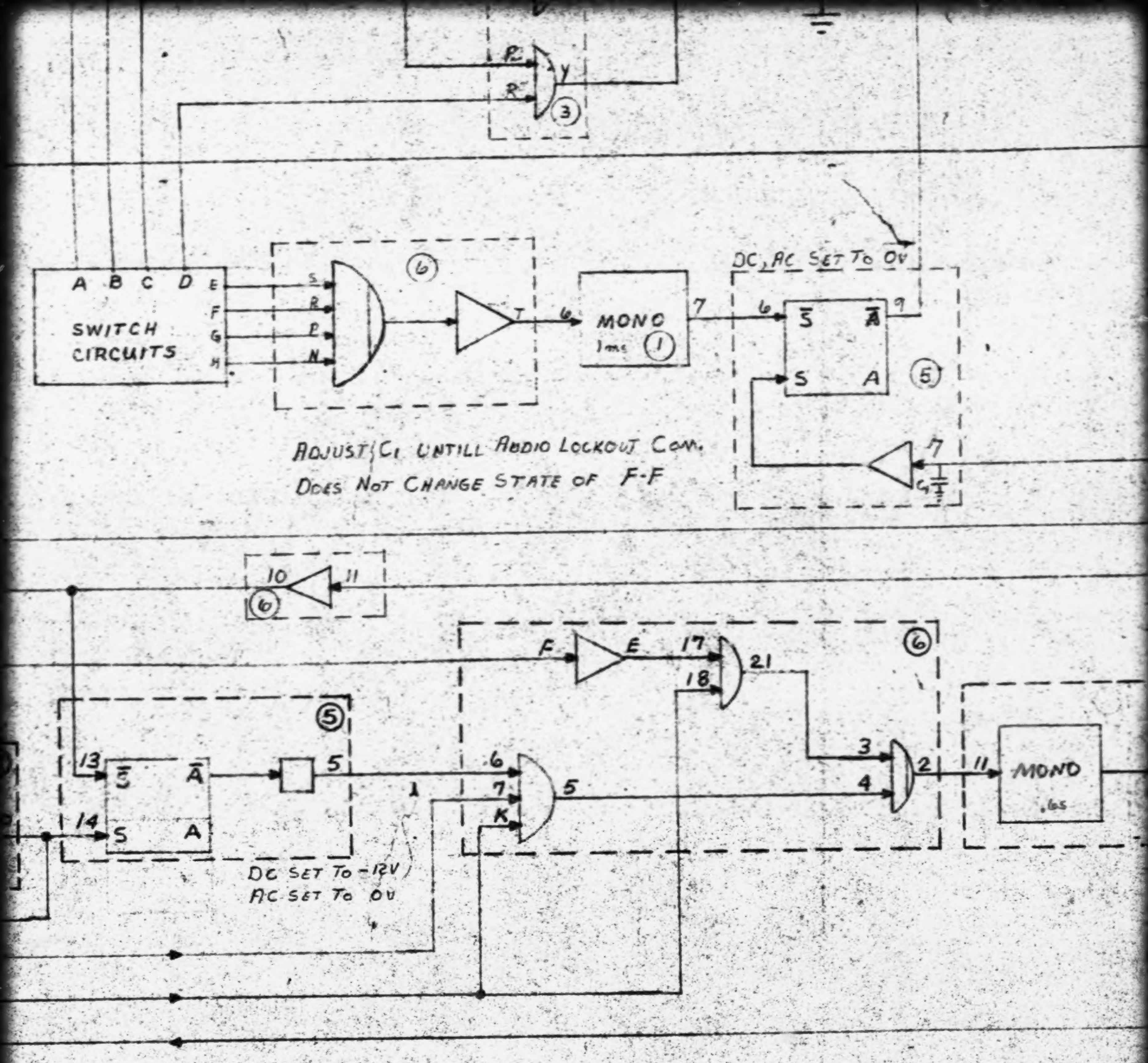

AC SET DRIVER
④
9
10
AC-SET
C-SET
3
2
② COUNTER
15
6
B
A
13
④
2
MONO
80 ms
3
3
4
2
B
C
A
16
17
21
P
R
Y
③
U
V
W
X
⑥
Y
.025 μF
V
W
X
⑦
Y
DC, AC SET TO 0V
A B C D E F G H
SWITCH
CIRCUITS
S
R
P
N
⑥
T
6
MONO
1ms
①
7
6
S̄
Ā
9
S
A
⑤
7
C1
10
11
⑥
F
E
17
21
⑥

ADJUST C1 UNTILL AUDIO LOCKOUT COM. DOES NOT CHANGE STATE OF F-F


9
3
V
W
X
y
Y
.025μF
⑦
10
$\bar{S}$
$\bar{A}$
4
11
S
A
⑤
DC, AC SET TO 0V
AUDIO LOCKOUT COMMAND
9
L
8
⑥
J
MONO
.3s
⑦
OSC.
(700 cps)
H
SET TO 0V
9
$\bar{A}$
A
⑤
7
G
⑥

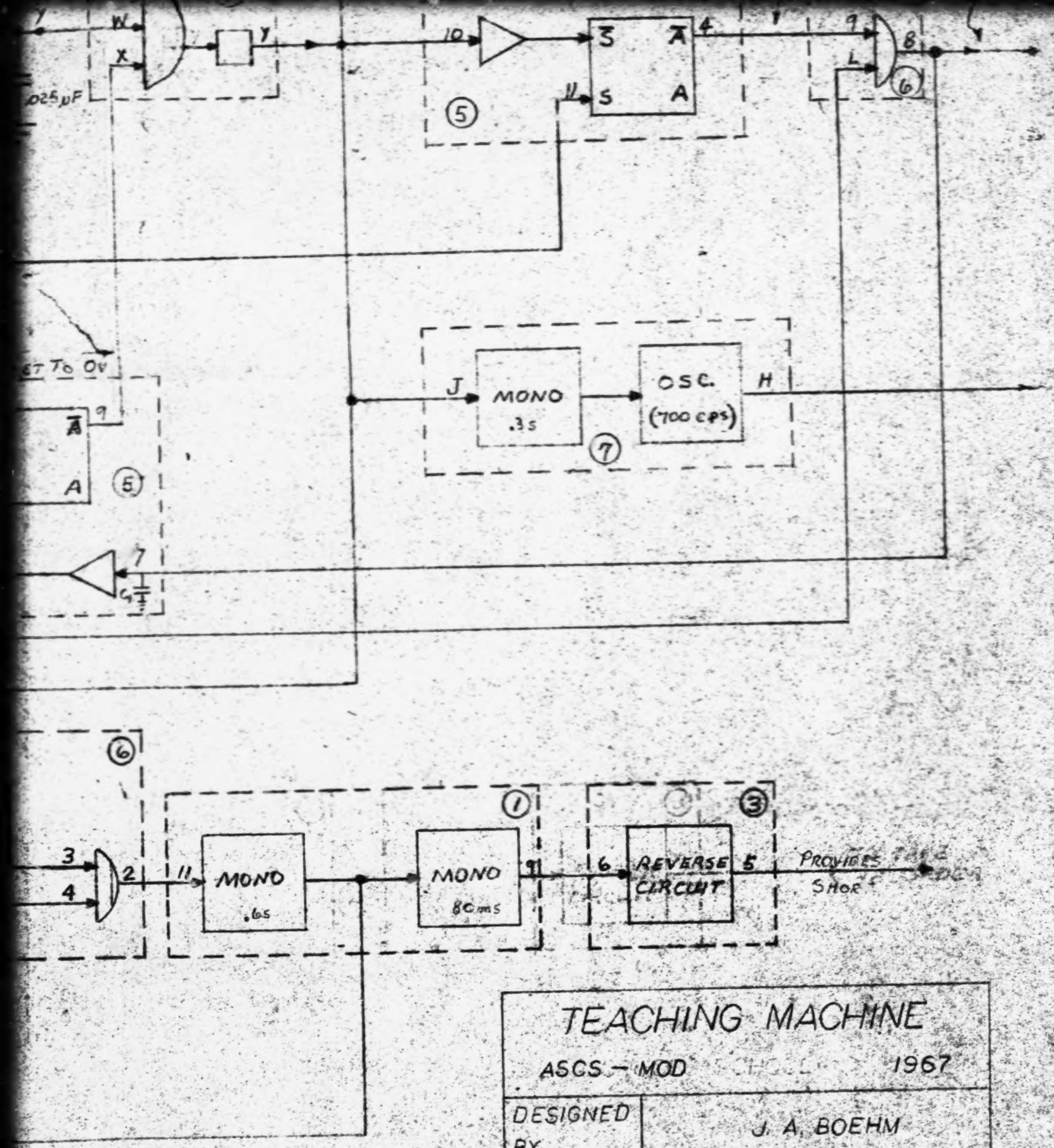
DICATE PIN CONNECTIONS.


4
LEVEL CONV.
④
5
FORWARD 0V
REVERSE +6V
0V
-8V
13
12
⑦
4
MONO
80ms
①
5
⑥
D
C
⑦
R
S
P



P
R
y
3
SWITCH CIRCUITS
A B C D
E F G H
S R P N
6
T
6
MONO 1ms 1
7
DC, AC SET TO 0V
6
S̄ Ā
9
S A
5
7
C1
10 11
6
F E
17
18
21
6
5
13 S̄ Ā
14 S A
5
1
6 7 K
5
3 4
2
11
MONO .6s
DC SET TO -12V
AC SET TO 0V

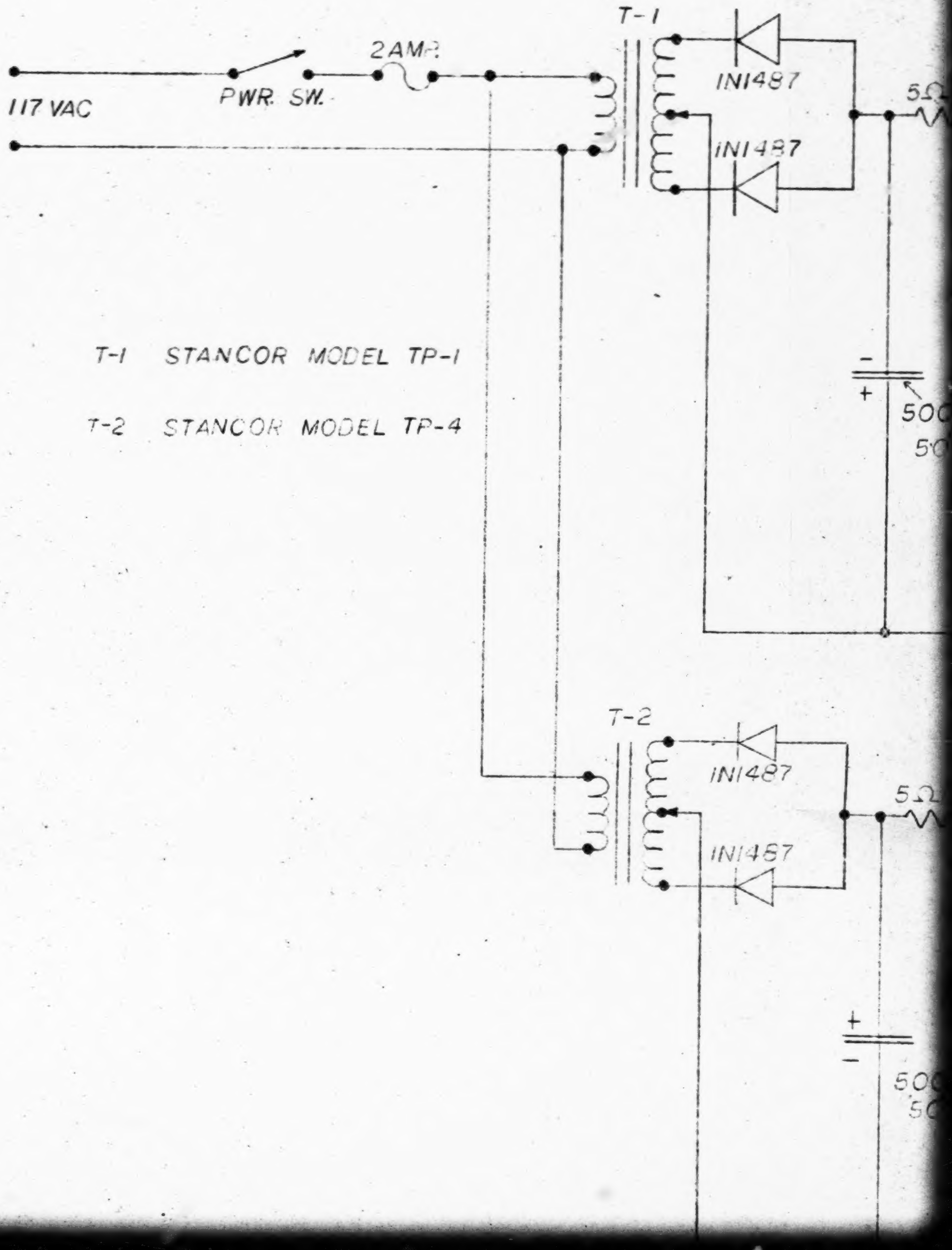
ADJUST C1 UNTILL AUDIO LOCKOUT COM. DOES NOT CHANGE STATE OF F-F


W
X
Y
.025µF
10
S̄
S
Ā
A
4
11
⑤
9
L
8
⑥
ET TO 0V
Ā
9
A
⑤
J
MONO
.3s
OSC.
(700 cps)
H
⑦
7
⑥
3
4
2
11
MONO
.6s
MONO
80ms
9
①
6
REVERSE
CIRCUIT
5
③
PROVIDES
SHOR

TEACHING MACHINE
ASCS - MOD 1967

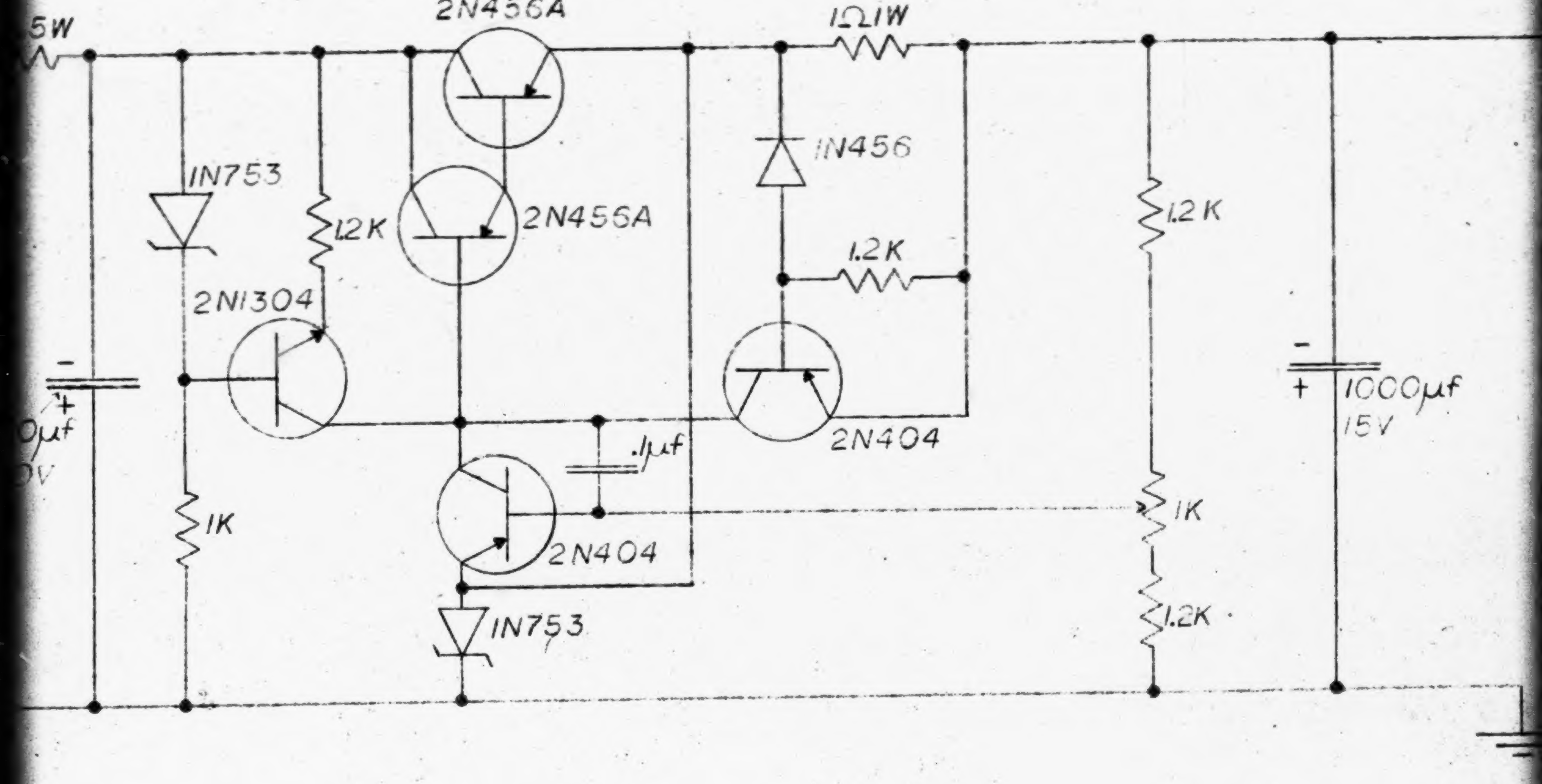
DESIGNED BY	J. A. BOEHM
DRAWN BY	G. P.
CHKD BY	MMK

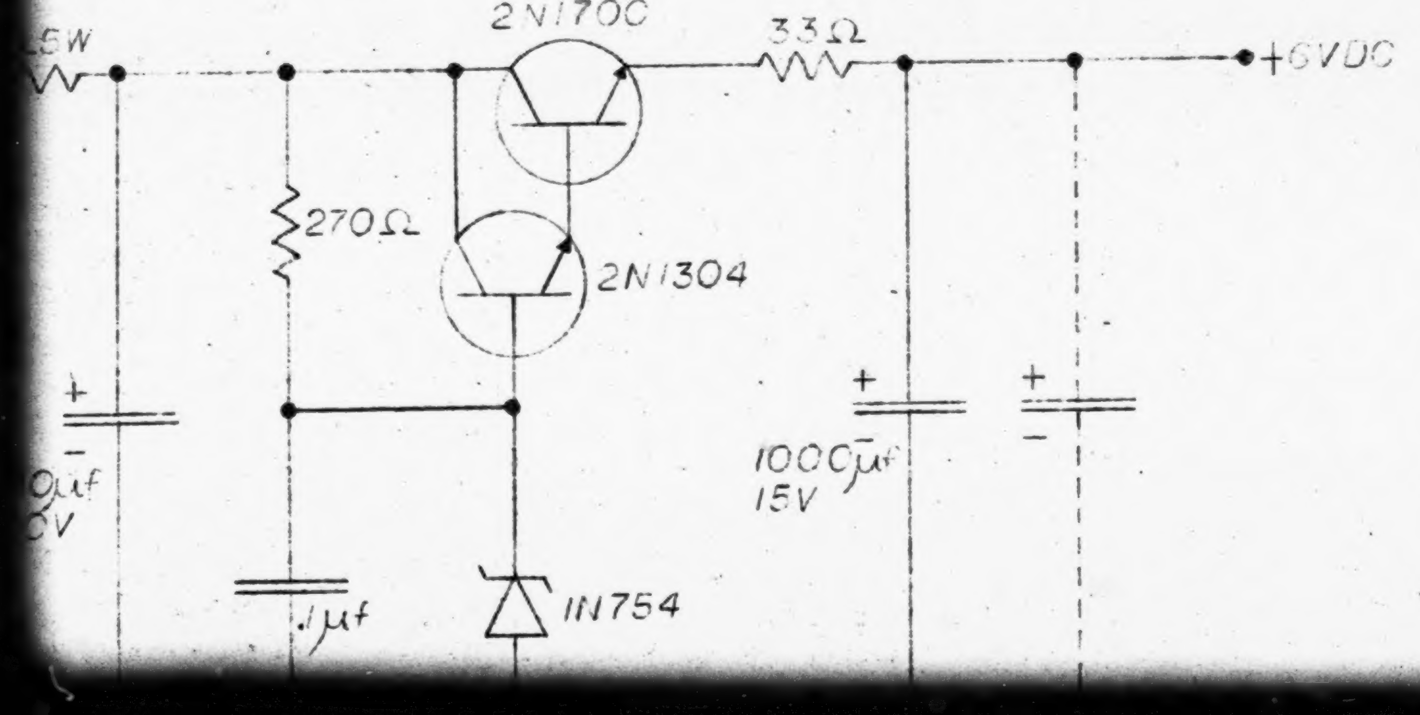
SPEECH AND HEARING DEPT.
AT
NEW MEXICO STATE UNIVERSITY

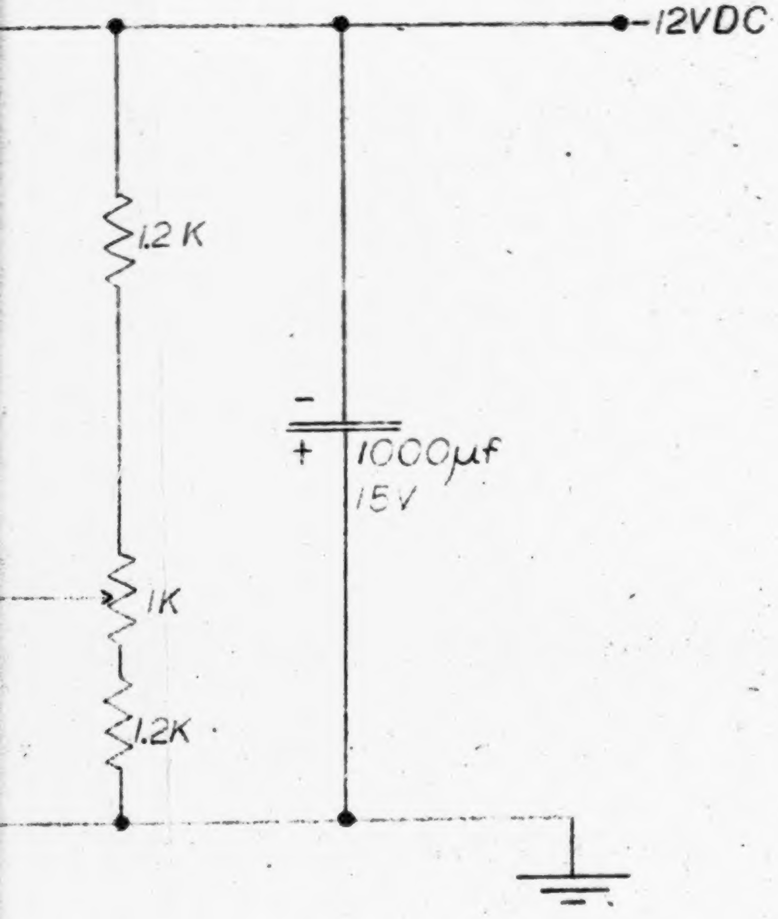

117 VAC
PWR. SW.
2AMP.
T-1
IN1487
IN1487
5Ω
−
+
500
50
T-2
IN1487
IN1487
5Ω
+
−
500
50

T-1 STANCOR MODEL TP-1

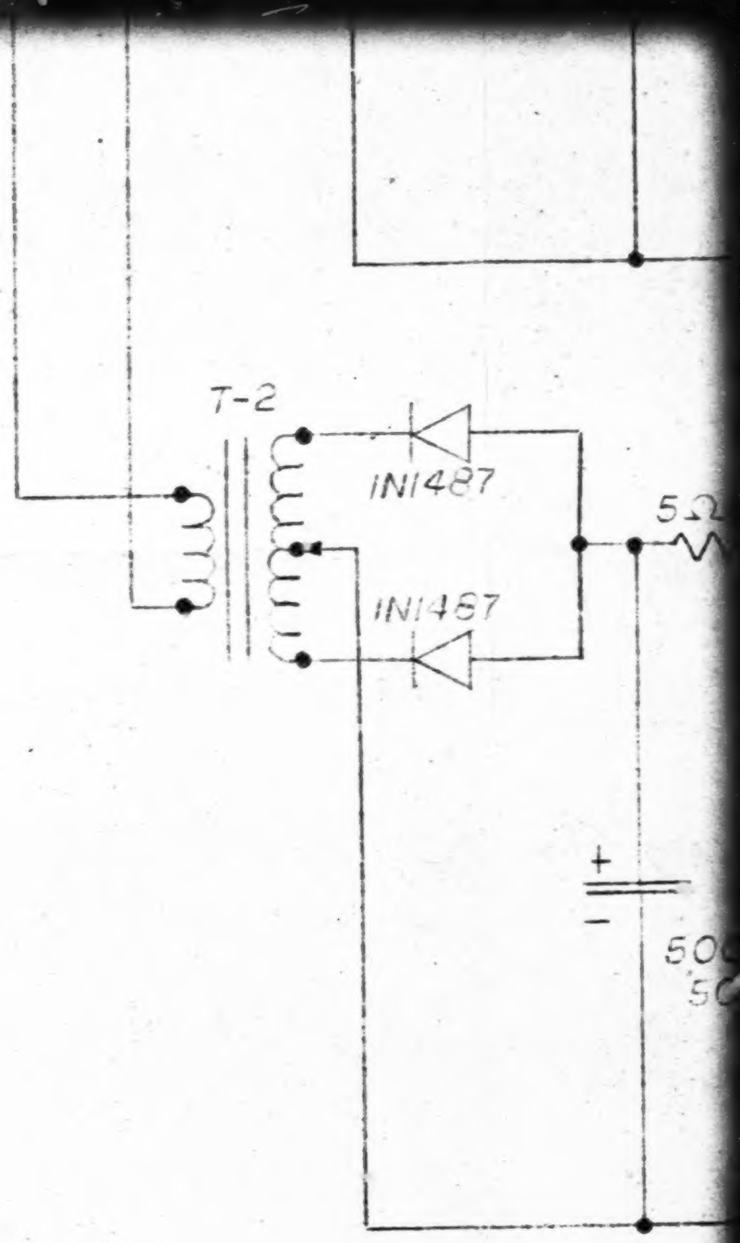
T-2 STANCOR MODEL TP-4

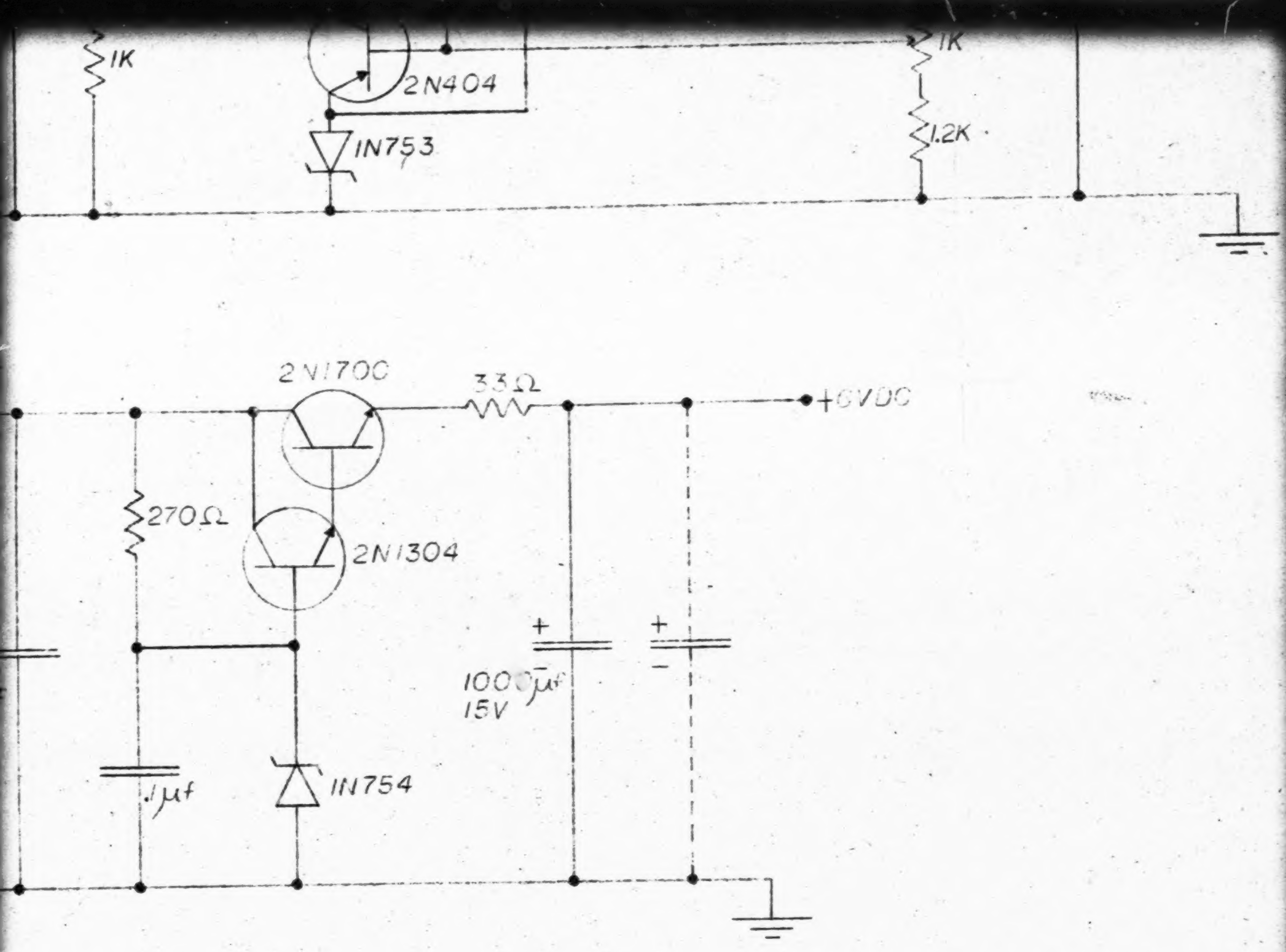

5W
2N456A
1Ω1W
IN753
1.2K
2N456A
IN456
1.2K
1.2K
2N1304
-
+
0μf
0V
2N404
.1μf
-
+
1000μf
15V
2N404
1K
1K
IN753
1.2K


5W
2N170C
33Ω
+6VDC
270Ω
2N1304
+
-
0μf
0V
+
1000μf
15V
+
-
.1μf
IN754


-12VDC
1.2 K
1K
1.2K
1000μf
15V
-
+

6VDC


T-2
IN1487
IN1487
5Ω
+
−
50
5


1K
2N404
1N753
1K
1.2K
2N1700
33Ω
+6VDC
270Ω
2N1304
+
+
−
1000μf
15V
.1μf
1N754

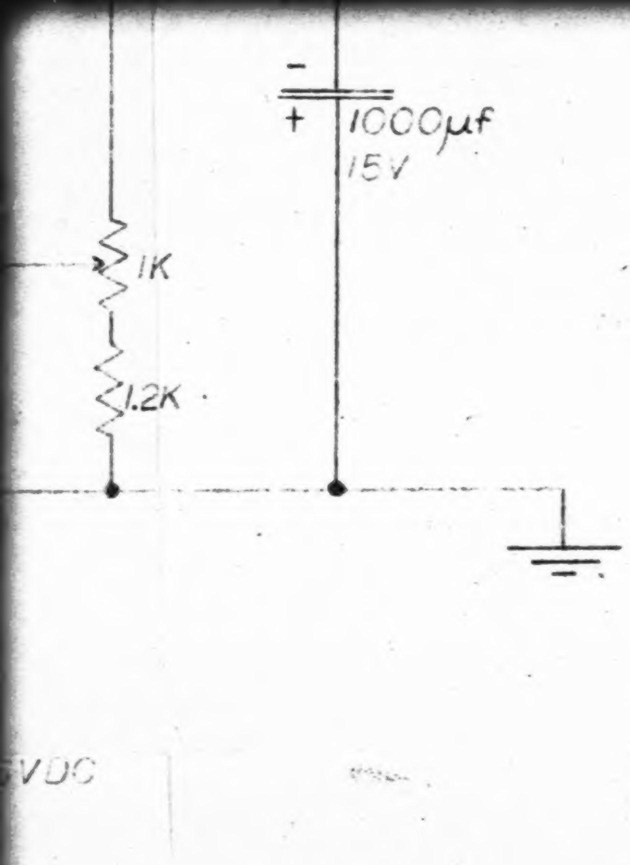
REG

DESIG
BY

DRAW
BY

SPE

N


–
+
1000µf
15V
1K
1.2K
VDC

REGULATED POWER SUPPLY

DC OUTPUTS: -12V AND +6V

DESIGNED BY	J. A. BOEHM		
DRAWN BY	MMK	CHKD BY	

SPEECH AND HEARING DEPARTMENT
AT
NEW MEXICO STATE UNIVERSITY